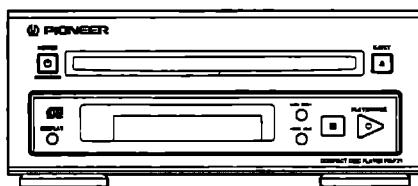


Service Manual



ORDER NO.
RRV1727

COMPACT DISC PLAYER

PD-F21

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Type	Model	Power Requirement		Remarks
		PD-F21		
MY	○	AC220-230V		
NV	○	AC230V		

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PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan

PIONEER ELECTRONICS SERVICE, INC. P.O. Box 1760, Long Beach, CA 90801-1760, U.S.A.

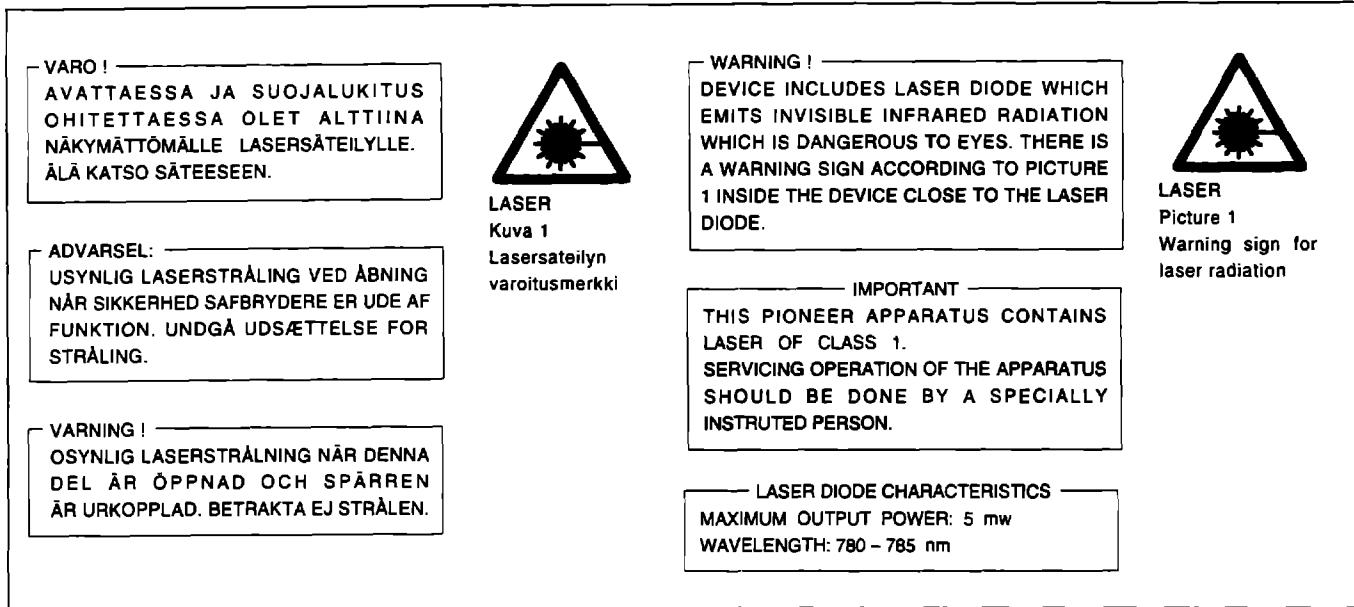
PIONEER ELECTRONIC (EUROPE) N.V. Haven 1087, Keetberglaan 1, 9120 Melsele, Belgium

PIONEER ELECTRONICS ASIACENTRE PTE. LTD. 501 Orchard Road, #10-00 Lane Crawford Place, Singapore 0923

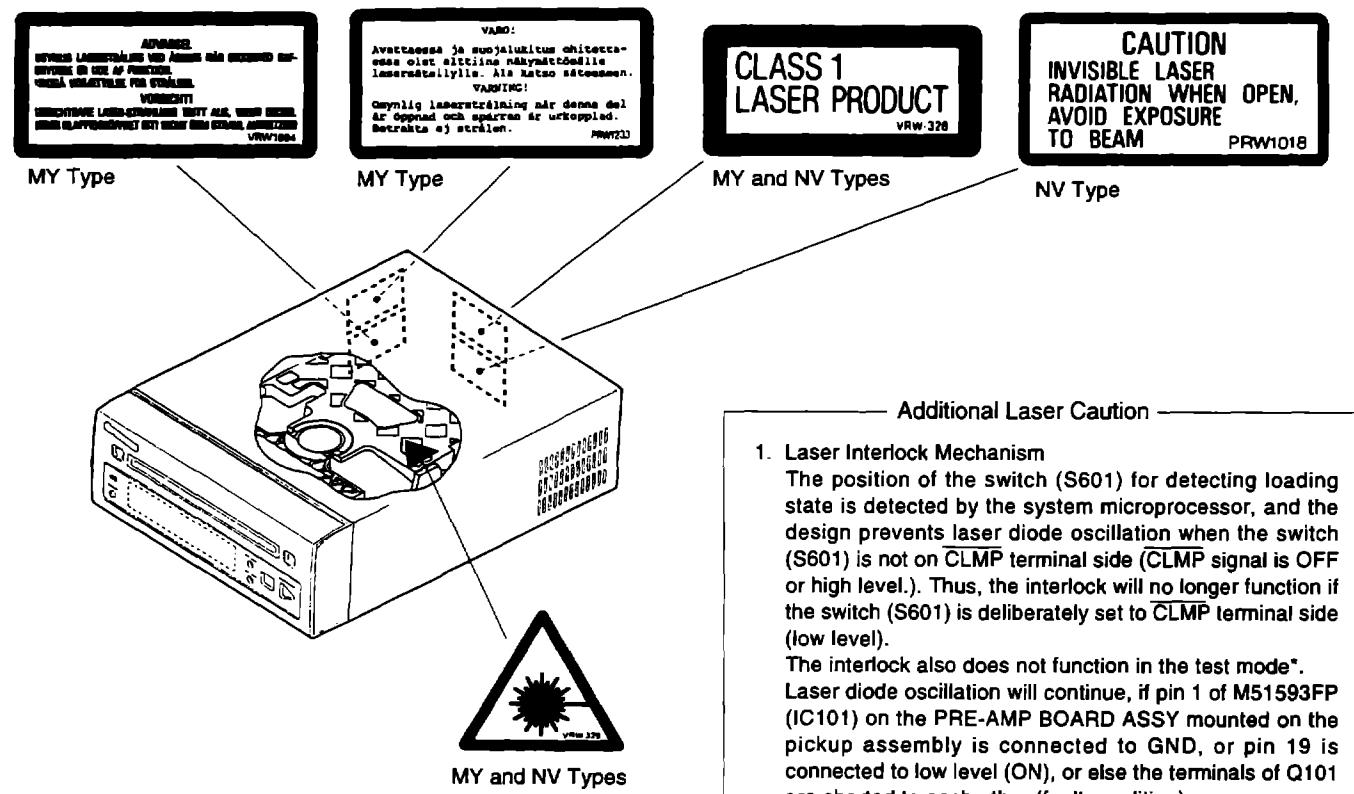
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T-KZE JAN. 1997 Printed in Japan

1. SAFETY INFORMATION



LABEL CHECK



Additional Laser Caution

1. **Laser Interlock Mechanism**
The position of the switch (S601) for detecting loading state is detected by the system microprocessor, and the design prevents laser diode oscillation when the switch (S601) is not on CLMP terminal side (CLMP signal is OFF or high level.). Thus, the interlock will no longer function if the switch (S601) is deliberately set to CLMP terminal side (low level).
The interlock also does not function in the test mode*. Laser diode oscillation will continue, if pin 1 of M51593FP (IC101) on the PRE-AMP BOARD ASSY mounted on the pickup assembly is connected to GND, or pin 19 is connected to low level (ON), or else the terminals of Q101 are shorted to each other (fault condition).
2. When the cover is opened, close viewing of the objective lens with the naked eye will cause exposure to a Class 1 laser beam.

*92S1B

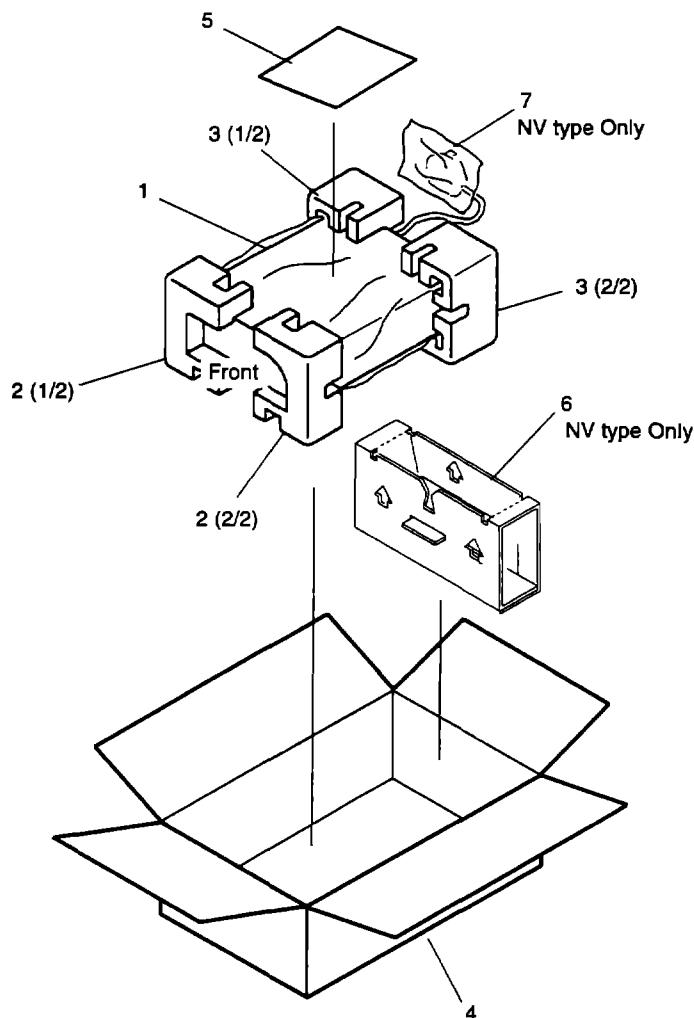
* Refer to page 28.

2. EXPLODED VIEWS AND PARTS LIST

NOTES : • Parts marked by " NSP " are generally unavailable because they are not in our Master Spare Parts List.

- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Screw adjacent to ∇ mark on the product are used for disassembly.

2.1 PACKING



(1) Parts List

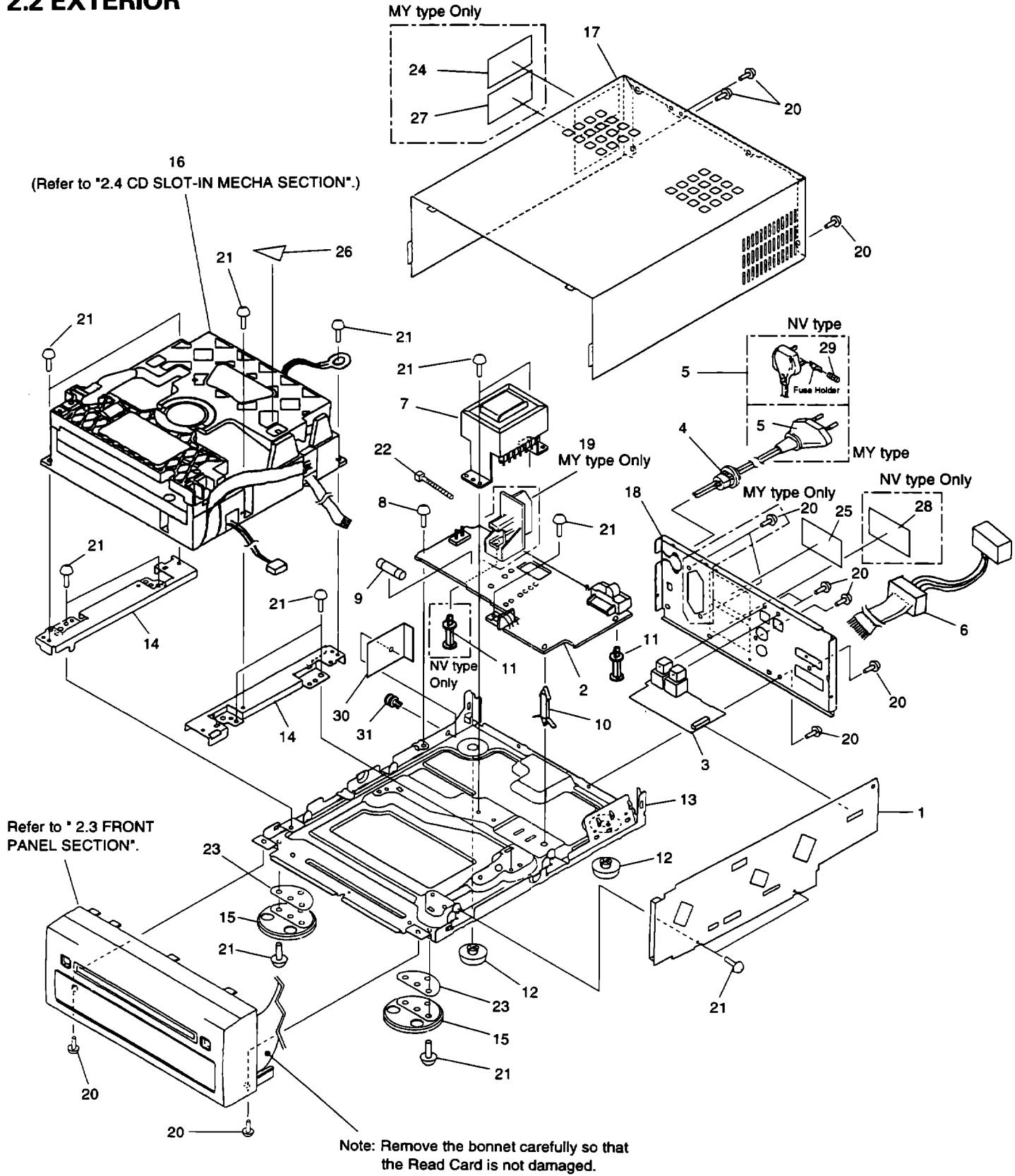
Mark	No.	Description	Parts No.
	1	MIRROR MAT	DHL1050
	2	PAD F MTCD	RHA1222
	3	PAD R MTCD	RHA1223
	4	PACKING CASE	See Contrast table (2)
NSP	5	WARRANTY CARD	ARY7008
	6	SPACER	See Contrast table (2)
	7	POLY. BAG	See Contrast table (2)

(2) Contrast Table

PD-F21/MY and NV have the same construction except for the following:

Mark	No.	Description	Part No.		Remarks
			PD-F21/MY	PD-F21/NV	
	4	Packing Case	RHG1828	RHG1832	
	6	Spacer	Not used	RHG1836	
	7	Poly. Bag	Not used	RHL1021	

2.2 EXTERIOR



(1) Parts List

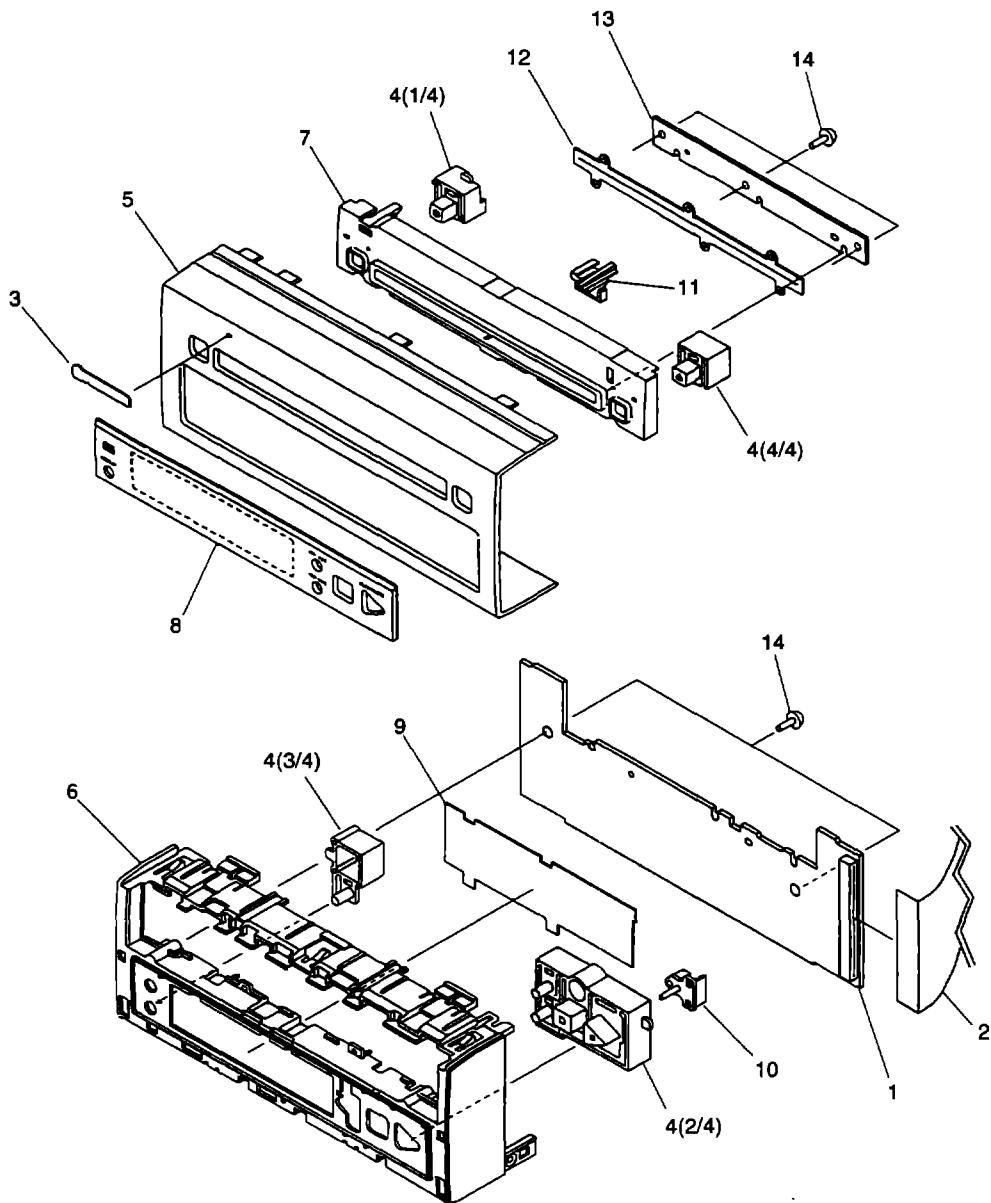
Mark	No.	Description	Parts No.	Mark	No.	Description	Parts No.
	1	MAIN ASSY	RWZ4210	NSP	16	CD SLOT-IN MECHA	AXA7014
	2	POWER ASSY	RWZ4083		17	BONNET MTCD	REA1266
	3	OPTICAL ASSY	RWZ4067		18	REAR PANEL	See Contrast table (2)
	4	STRAIN RELIEF	CM-22B	⚠	19	1P AC OUTLET	See Contrast table (2)
⚠	5	AC POWER CORD	See Contrast table (2)		20	SCREW	BBT30P080FNI
	6	CONNECTION CABLE	RDE1049		21	SCREW	BBZ30P080FMC
⚠	7	POWER TRANSFORMER (T1)	RTT1328		22	BINDER	ZCA-SKB90BK
⚠	8	SCREW (3×8)	ABA7017		23	PLATE	RNM1050
⚠	9	FUSE (T2.5A)	AEK1058		24	CAUTION LABEL HE	See Contrast table (2)
NSP	10	PCB SUPPORT	AEC1006		25	CAUTION LABEL (F)	VRW-328
NSP	11	PCB SPACER (3×12)	AEC1372		26	CAUTION LABEL (G)	VRW-329
	12	FOOT	REC-434		27	CAUTION LABEL	See Contrast table (2)
NSP	13	CHASSIS MTCD	RNB1123		28	CAUTION LABEL	See Contrast table (2)
NSP	14	MECHA STAY CD	RNE1899	⚠	29	FUSE (T5A)	See Contrast table (2)
	15	INSULATOR F ASSY	RNK2231		30	BRACKET	RNE1938
					31	NYLON RIVET	AEC-525

(2) Contrast Table

PD-F21/MY and NV have the same construction except for the following:

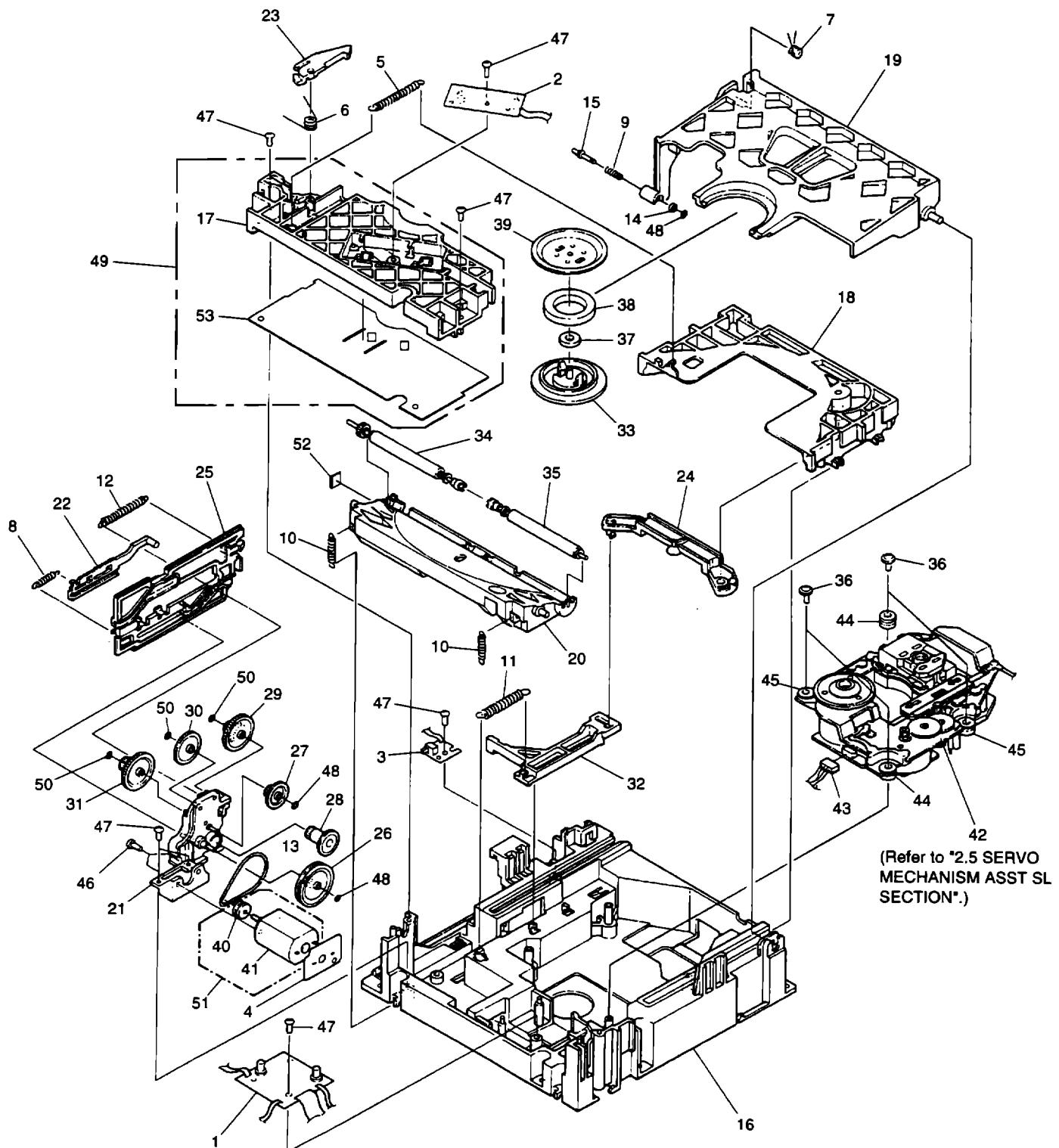
Mark	No.	Description	Part No.		Remarks
			PD-F21/MY	PD-F21/NV	
⚠	5	AC Power Cord	PDG1008	PDG1055	
⚠	29	└ Fuse (T5A)	Not used	PEK1003	
⚠	18	Rear Panel	RNA2111	RNA2114	
⚠	19	1P AC Outlet	AKP1034	Not used	
	24	Caution Label HE	PRW1233	Not used	
	27	Caution Label	VRW1094	Not used	
	28	Caution Label	Not used	PRW1018	

2.3 FRONT PANEL SECTION



Mark	No.	Description	Parts No.	Mark	No.	Description	Parts No.
1	FRONT ASSY		RWZ4065	9	FL FILTER CD		REC1288
2	LEAD CARD 39P (J1)		RDD1380	10	PLAY LENS		RNK2232
3	NAME PLATE		AAM1002				
4	FUNCTION BUTTON CD		RAC2142	11	INDICATOR LENS CD		RNK2233
5	FRONT PANEL		RAH2764	12	SHEET		AWL7020
6	PANEL BASE MTCD		RAH2767	NSP	13	SLOT PCB	RNZ3240
7	FRONT KIT CD		RAH2768		14	SCREW	BBZ30P080FMC
8	DISPLAY LENS CD		RAH2771				

2.4 CD SLOT-IN MECHA SECTION

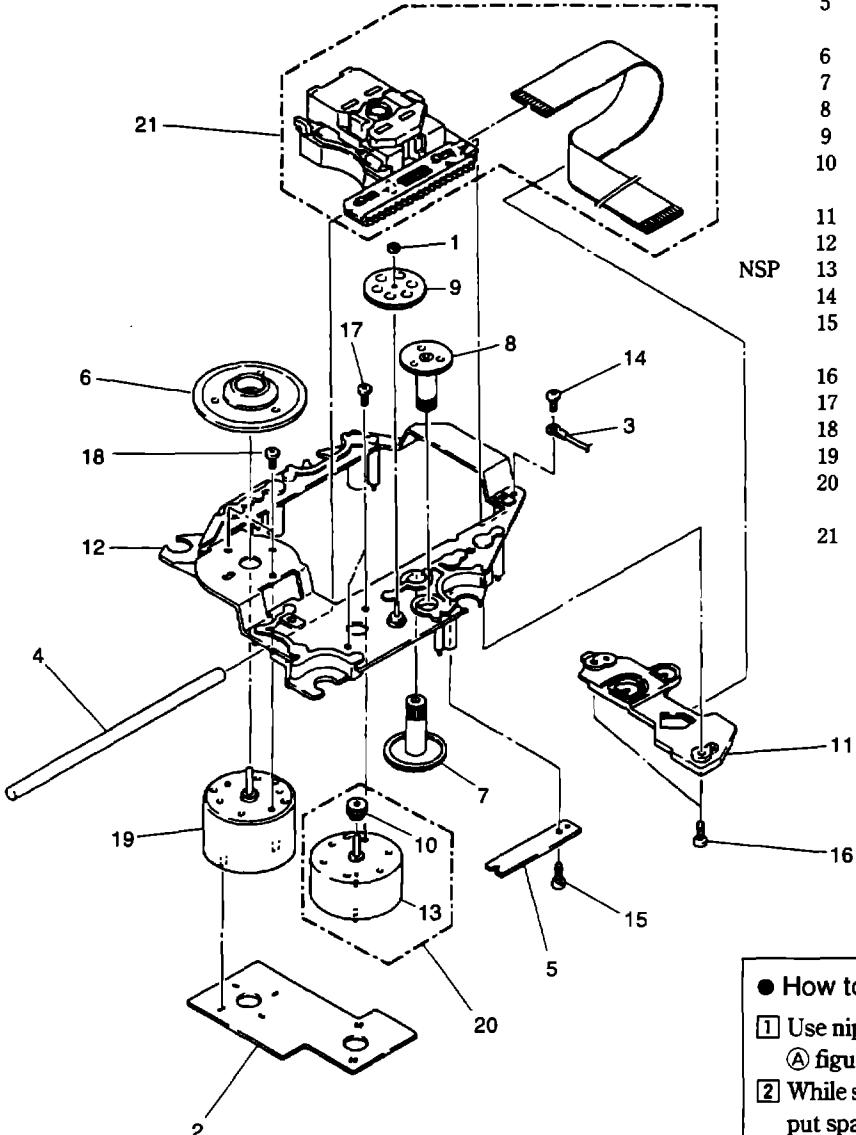


Parts List for CD Slot-in Mecha Section

Mark	No.	Description	Parts No.	Mark	No.	Description	Parts No.
NSP	1	SENSOR PCB ASSY	AWZ7328		51	MOTOR ASSY	AEA7000
NSP	2	LED PCB ASSY	AWZ7329		52	AV SHEET	AEB7021
NSP	3	SW PCB ASSY	AWZ7330	NSP	53	DISC PLATE SHEET	AEB7035
NSP	4	MOTOR PCB ASSY	AWZ7331				
	5	SPRING	ABH7035				
	6	ROCK LEVER SPRING	ABH7019			OIL (GREEN)	GEM1015
	7	SLAMP SPRING	ABH7020				
	8	RACK SPRING	ABH7021				
	9	P SPRING	ABH7022				
	10	ROLLER HOLDER SPRING	ABH7023				
	11	SPRING B	ABH7024				
	12	CAM PLATE SPRING	ABH7025				
	13	BELT A	AEB7012				
	14	WASHER	AEB7018				
	15	PIN	ALA7005				
	16	MECHANISM BASE	ANW7022				
	17	DISC PLATE	ANW7023				
	18	CENTERING PLATE	ANW7024				
	19	CLAMPER HOLDER	ANW7025				
	20	ROLLER HOLDER	ANW7078				
	21	GEAR HOLDER	ANW7027				
	22	RACK	ANW7028				
	23	ROCK LEVER	ANW7029				
	24	STARTING LEVER	ANW7030				
	25	CAM PLATE	ANW7031				
	26	GEAR PULLEY	ANW7032				
	27	GEAR A	ANW7033				
	28	GEAR B	ANW7034				
	29	GEAR C	ANW7035				
	30	GEAR D	ANW7036				
	31	DRIVE GEAR	ANW7037				
	32	STARTING PLATE	ANW7038				
	33	CLAMPER	ANW7083				
	34	ROLLER ASSY L	AXA7019				
	35	ROLLER ASSY R	AXA7020				
NSP	36	SCREW	PBA1048				
	37	H SPACER	PEB1249				
	38	CLAMP MAGNET	PMF1014				
	39	YOKER	PNB1216				
	40	MOTOR PULLEY	PNW1634				
NSP	41	MOTOR	PXM1002				
NSP	42	SERVO MECHANISM ASSY SL	AXA7017				
	43	CONNECTOR ASSY 4P	PDE1238				
	44	FLOAT RUBBER	PEB1014				
	45	FLOAT RUBBER	PEB1132				
	46	SCREW	BMZ20P040FMC				
	47	SCREW	PPZ30P060FMC				
	48	WASHER	WT12D032D025				
	49	DISC PLATE ASSY	AEA7003				
	50	WASHER	WT17D034D025				

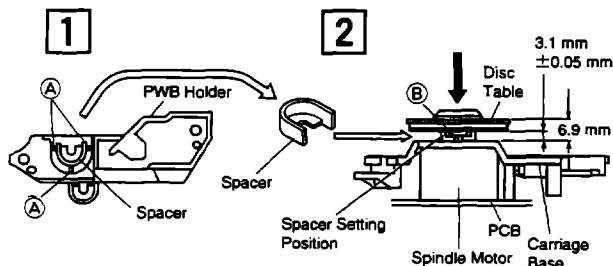
2.5 SERVO MECHANISM ASSY SL SECTION

Mark	No.	Description	Parts No.
	1	WASHER	WT12D032D025
	2	MECHANISM BOARD ASSY	PWX1192
	3	GROUND LEAD UNIT	PDF1104
	4	GUIDE BAR	PLA1094
	5	GEAR STOPPER	PNB1303
	6	DISC TABLE	PNW1608
	7	GEAR 1	PNW2052
	8	GEAR 2	PNW2053
	9	GEAR 3	PNW2054
	10	PINION GEAR	PNW2055
NSP	11	PWB HOLDER	PNW2057
	12	CARRIAGE BASE	PNW2699
	13	DC MOTOR (CARRIAGE)	PXM1027
	14	SCREW	BBZ26P060FMC
	15	SCREW	BPZ20P060FMC
	16	SCREW	BPZ26P100FMC
	17	SCREW	JFZ17P025FZK
	18	SCREW	JFZ20P030FNI
	19	DC MOTOR ASSY (SPINDLE)	PEA1235
	20	DC MOTOR ASSY (CARRIAGE)	PEA1246
	21	PICKUP ASSY	PEA1291



● How to install the disc table

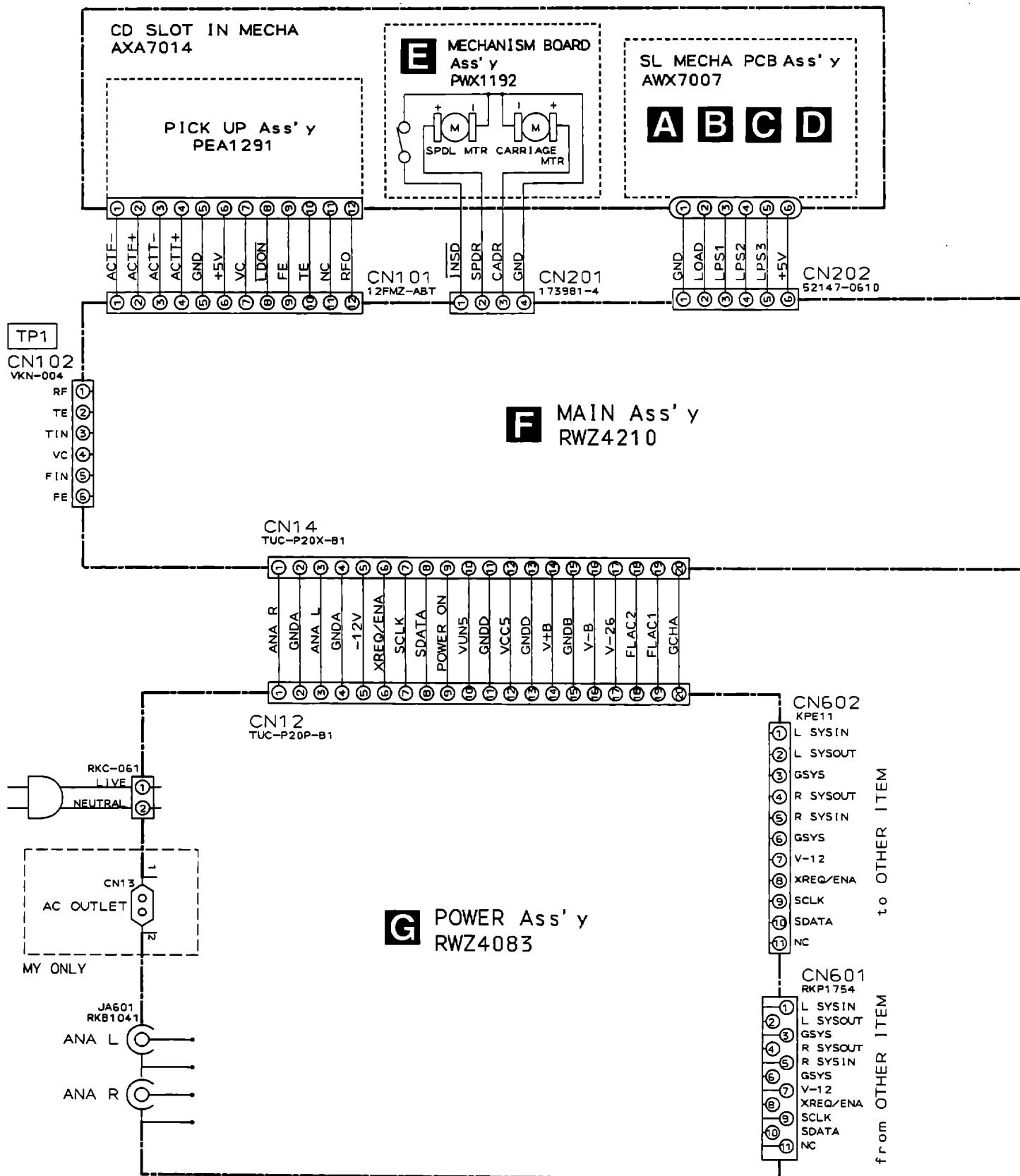
- 1 Use nipper or other tool to cut the three sections marked **A** figure 1. Then remove the spacer.
- 2 While supporting the spindle motor shaft with the stopper, put spacer on top of the motor base (angled so it doesn't touch section **B**), and stick the disc table on top (takes about 9 kg pressure). Take off the spacer.



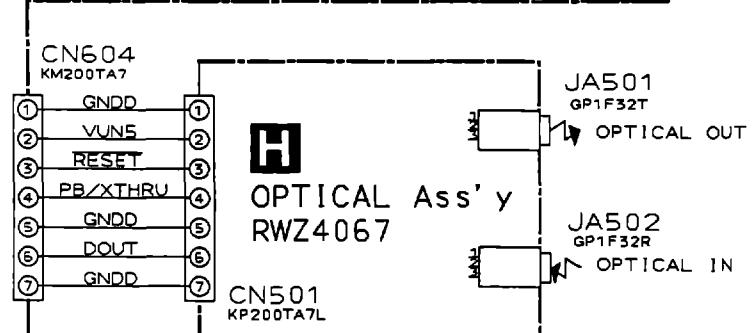
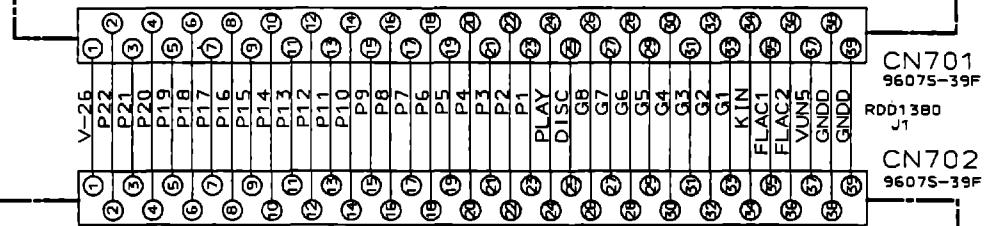
3. SCHEMATIC DIAGRAM

Note: When ordering service parts, be sure to refer to "EXPLODED VIEWS AND PARTS LIST" or "PCB PARTS LIST".

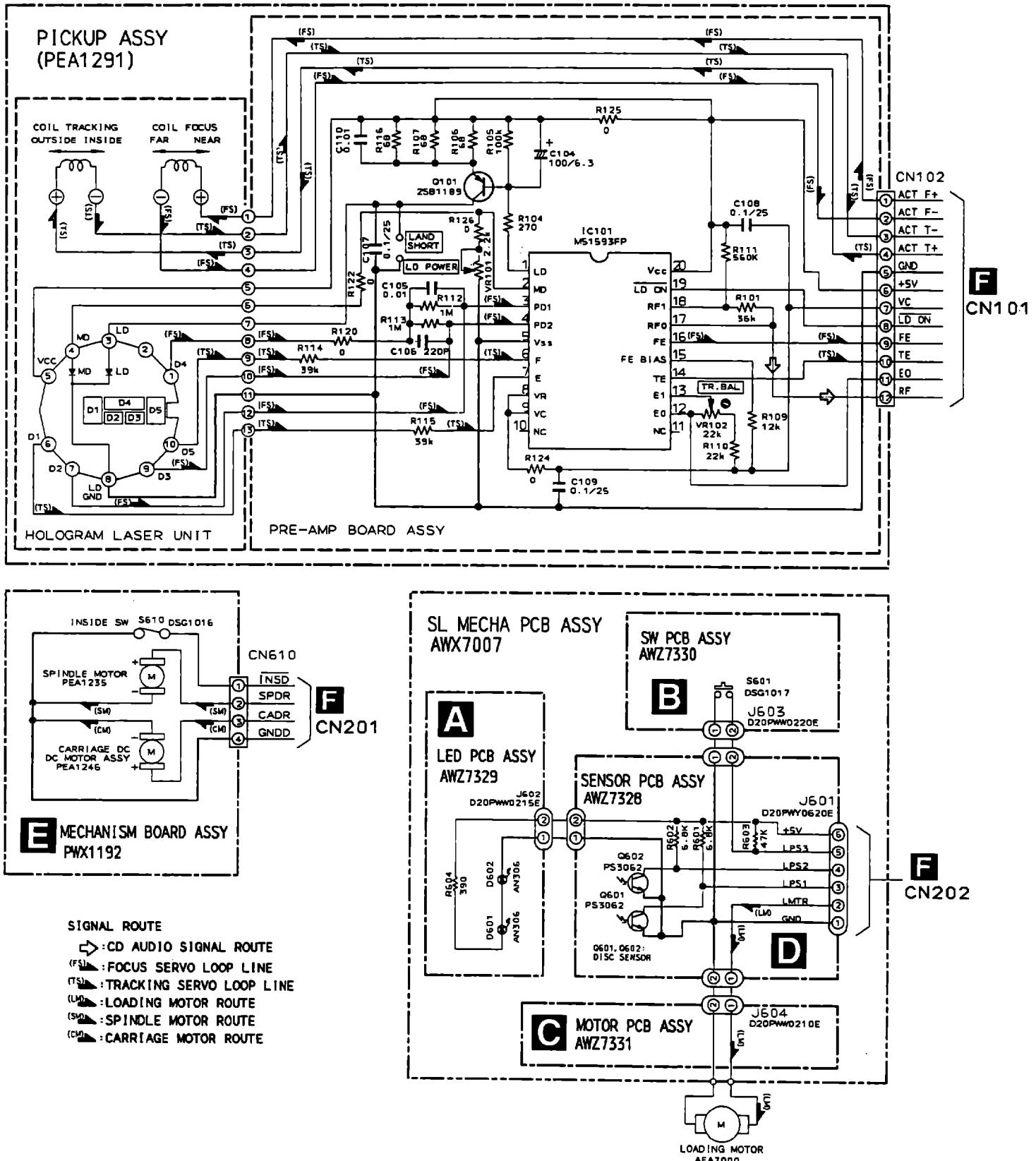
3.1 OVERALL SCHEMATIC DIAGRAM



I FRONT Ass'y
RWZ4065



3.2 LED PCB ASSY, SW PCB ASSY, MOTOR PCB ASSY, SENSOR PCB ASSY, MECHANISM BOARD ASSY AND PICKUP ASSY



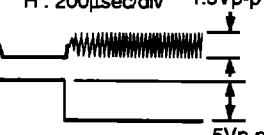
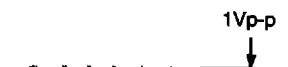
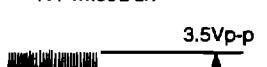
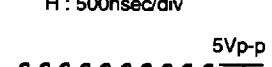
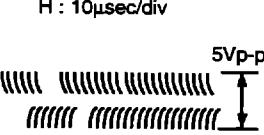
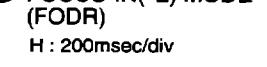
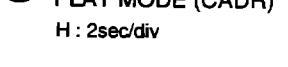
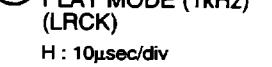
3.3 MAIN ASSY

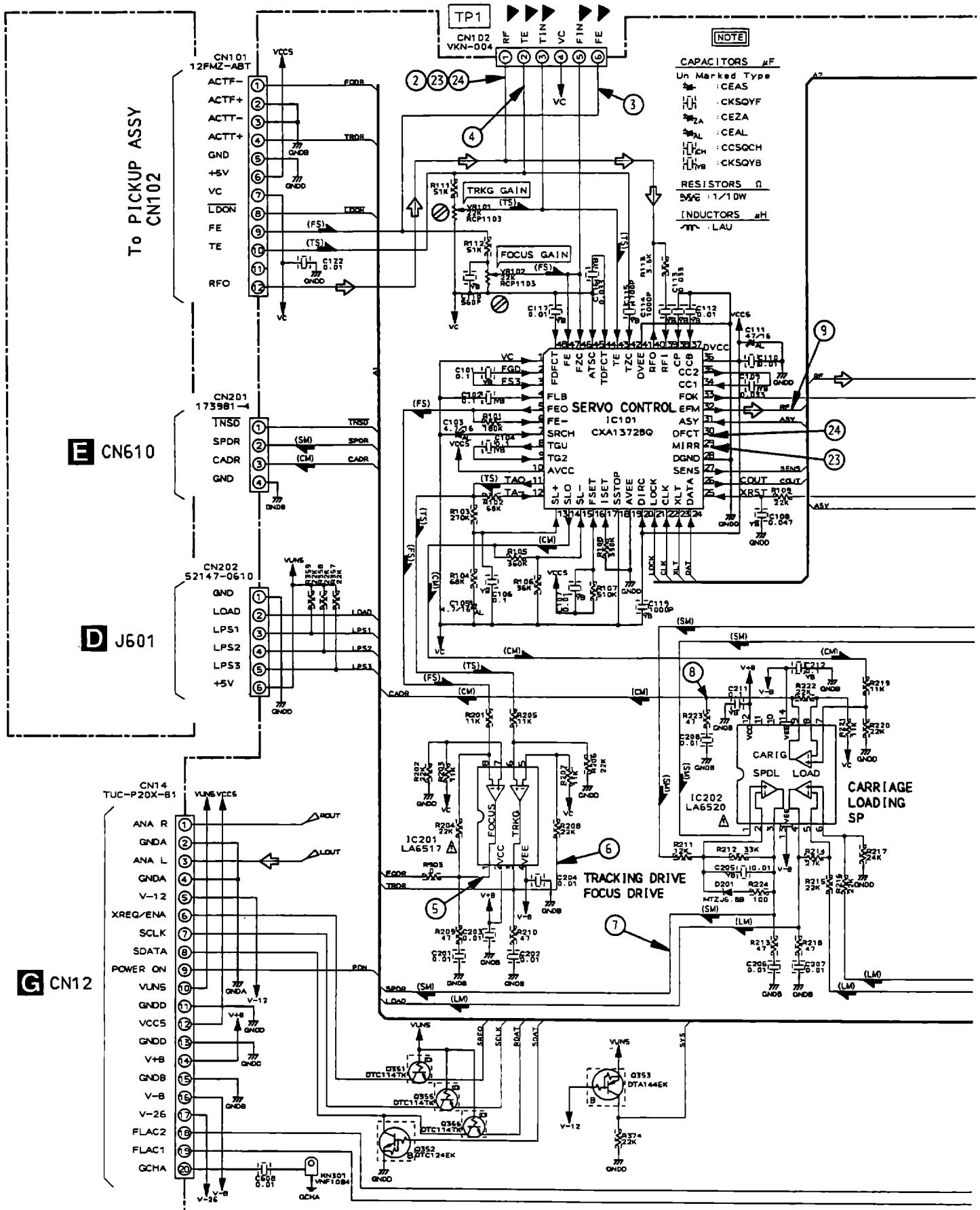
Waveforms

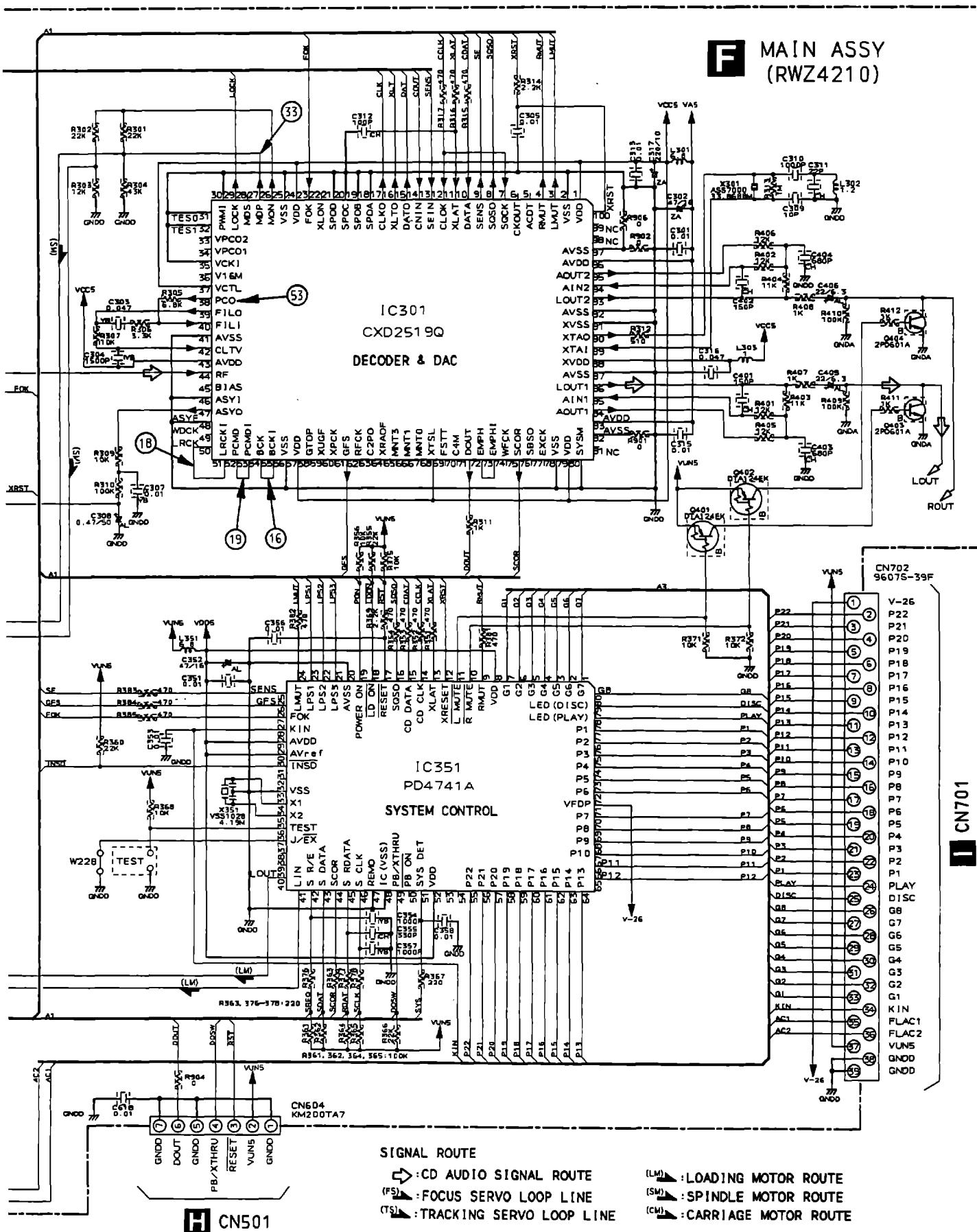
Note: The encircled numbers denote measuring point in the schematic diagram.

*1 50T-JUMP: After switching to the pause mode, press the manual search key.

*2 FOCUS-IN: Press the play key without loading a disc.

<p>2 TP1- Pin 1 : PLAY MODE (RF) H : 500nsec/div</p> 	<p>5 IC201- Pin 1 : PLAY MODE (FODR) H : 1msec/div</p> 	<p>8 IC202- Pin 9 : TRACK SEARCH MODE (CADR) H : 200msec/div</p> 	<p>19 IC301- Pin 52 : PLAY MODE (1kHz) (PCMD) H : 500nsec/div</p> 
<p>2 TP1- Pin 1 : TRACK SEARCH MODE (RF) H : 200μsec/div</p> 	<p>6 IC201- Pin 3 : PLAY MODE (TRDR) H : 1msec/div</p> 	<p>9 IC101- Pin 32 : PLAY MODE (EFM) H : 500nsec/div</p> 	<p>23 TRACK SEARCH MODE Upper:TP1-Pin1(RF) Lower:IC101-Pin 29 (MIRR) H : 200μsec/div 1Vp-p</p> 
<p>3 TP1- Pin 6 : PLAY MODE (FOER) H : 10msec/div</p> 	<p>6 IC201- Pin 3 : 50T-JUMP(*1) MODE (TRDR) H : 1msec/div</p> 		<p>24 PLAY MODE Upper:TP1-Pin1(RF) Lower:IC101-Pin 30 (DFCT) H : 200μsec/div 1.5Vp-p</p> 
<p>4 TP1- Pin 2 : PLAY MODE (TRER) H : 10msec/div</p> 	<p>7 IC202- Pin 3 : PLAY MODE (SPDR) H : 50msec/div</p> 		<p>33 IC301- Pin 27 : PLAY MODE (MDP) H : 2μsec/div</p> 
<p>4 TP1- Pin 2 : 50T- JUMP(*1) MODE (TRER) H : 1msec/div</p> 	<p>7 IC202- Pin 3 : TRACK SEARCH MODE (SPDR) H : 50msec/div</p> 	<p>16 IC301- Pin 54 : PLAY MODE (1kHz) (BCLK) H : 500nsec/div</p> 	<p>53 IC301- Pin 38 : PLAY MODE (PCO) H : 10μsec/div</p> 
<p>5 IC201- Pin 1 : FOCUS-IN(*2) MODE (FODR) H : 200msec/div</p> 	<p>8 IC202- Pin 9 : PLAY MODE (CADR) H : 2sec/div</p> 	<p>18 IC301- Pin 50 : PLAY MODE (1kHz) (LRCK) H : 10μsec/div</p> 	





SIGNAL ROUTE

CD AUDIO SIGNAL ROUTE

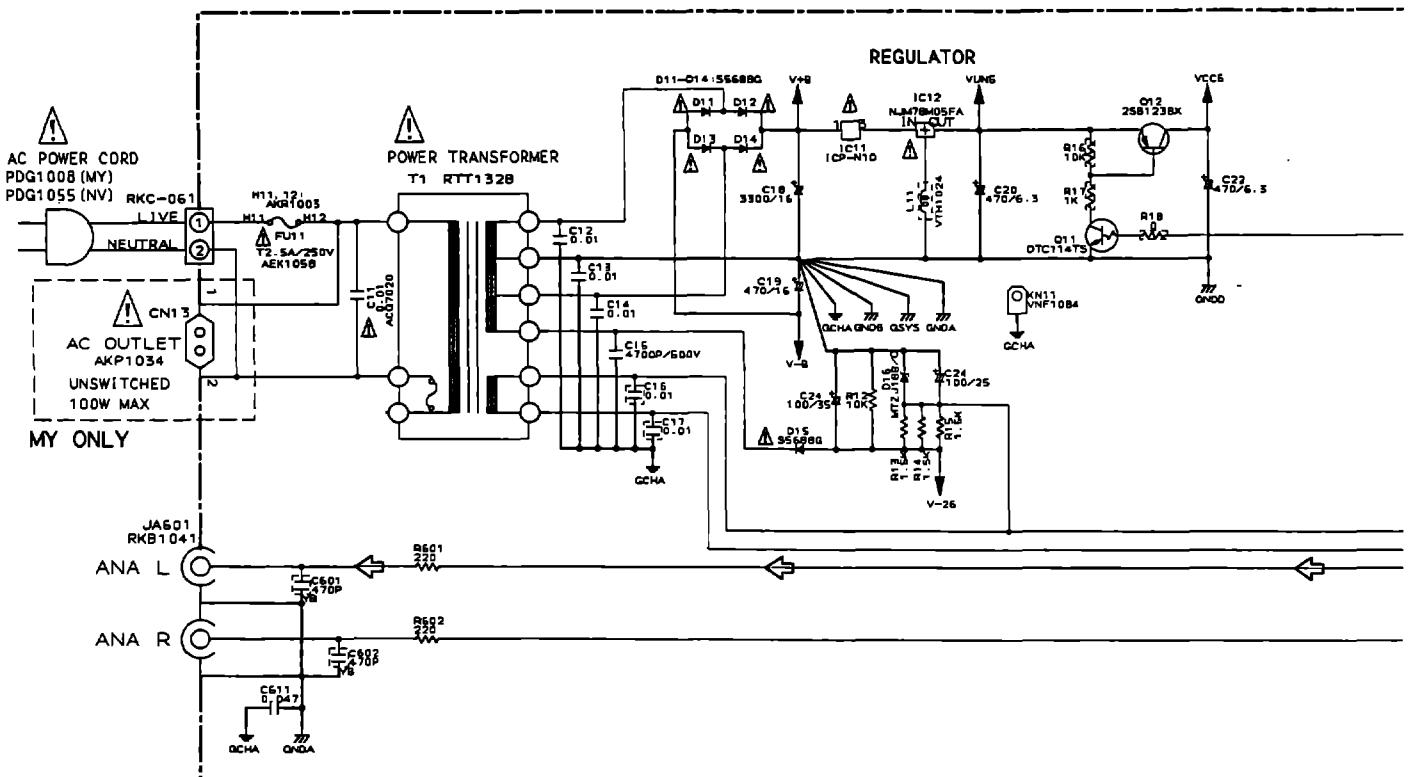
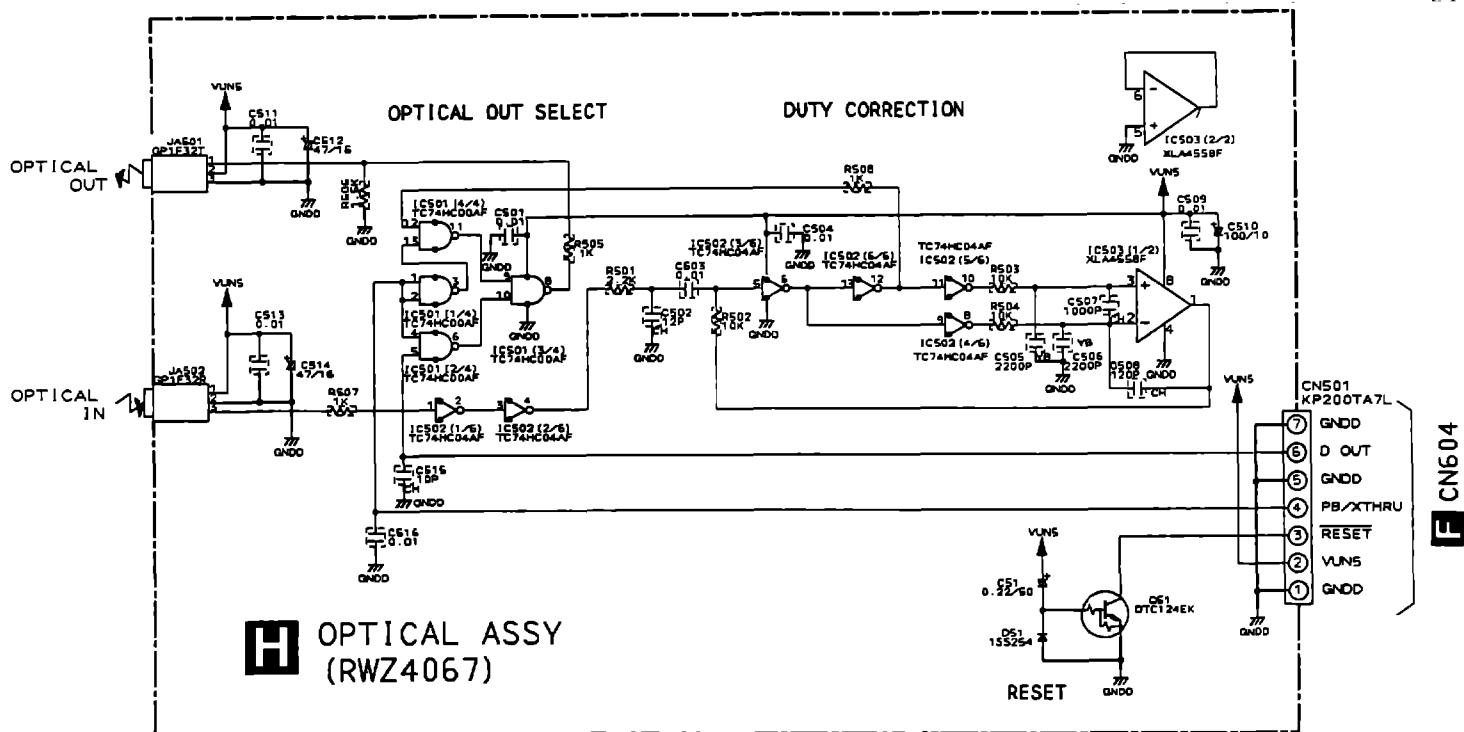
(FS) : FOCUS SERVO LOOP LINE

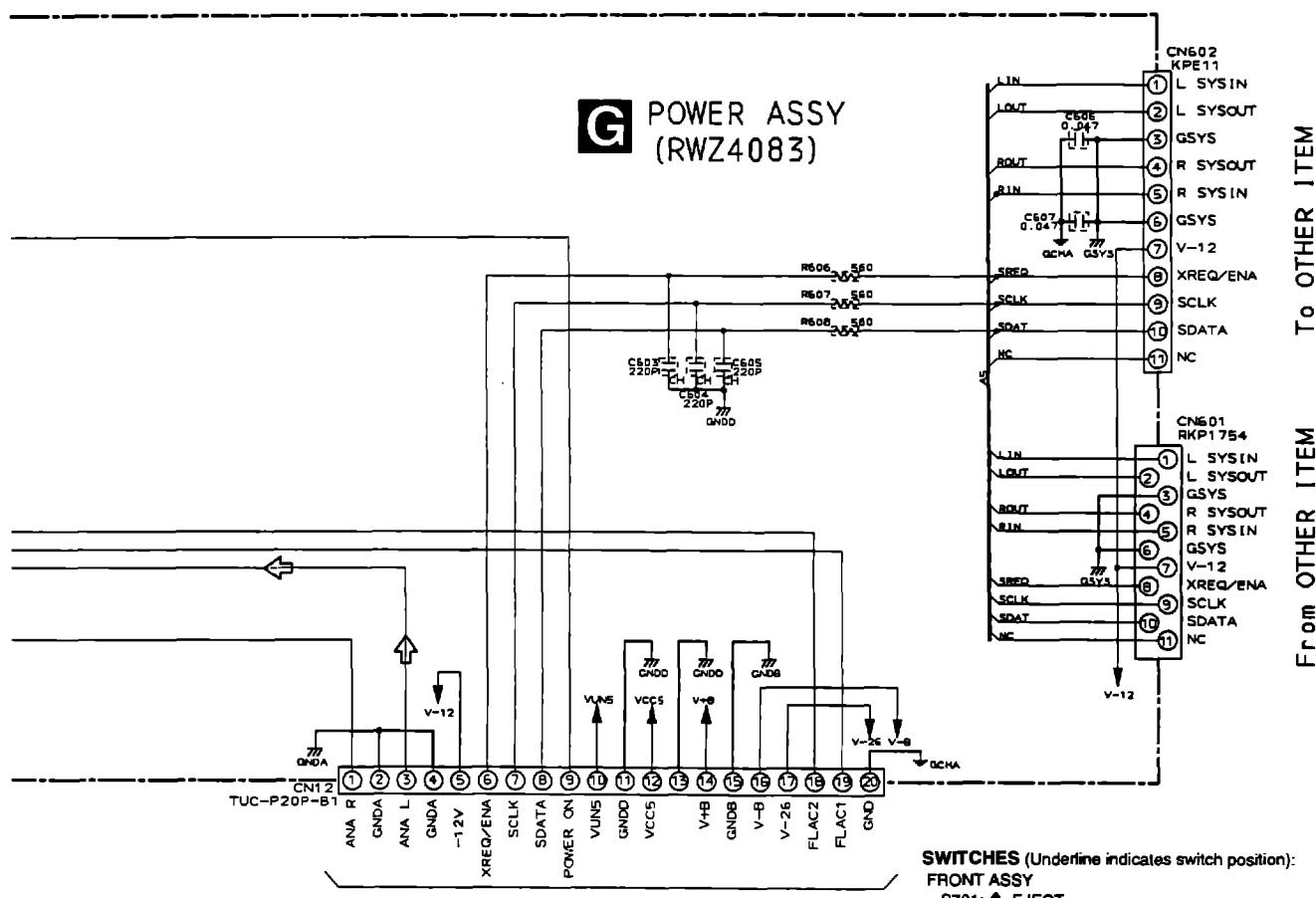
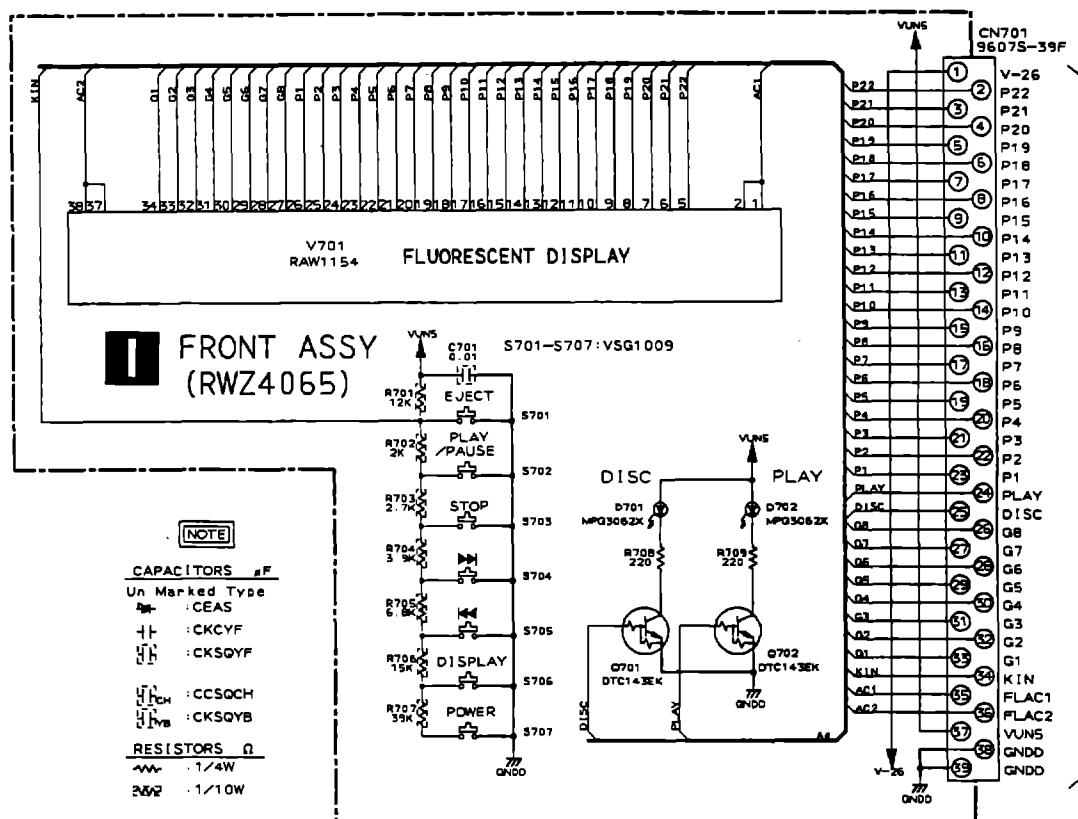
(LM) ► LOADING MOTOR ROUTE

 : LOADING MOTOR ROUTE
(SM)  : SPINDLE MOTOR ROUTE

SPINDLE MOTOR ROUTE
(CM) CARRIAGE MOTOR ROUTE

3.4 FRONT ASSY, POWER ASSY AND OPTICAL ASSY





SWITCHES (Underline indicates switch position):

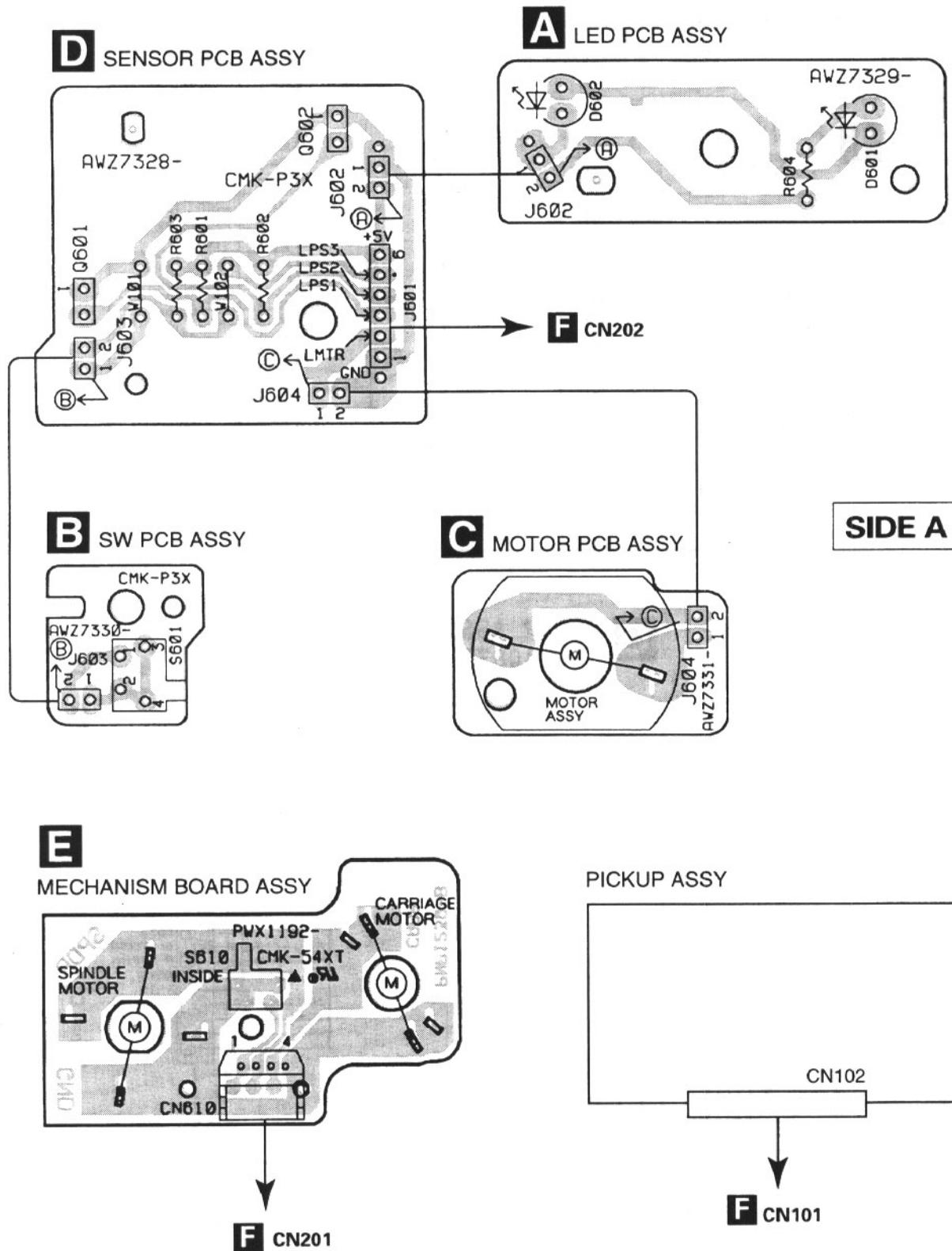
FRONT ASSY

- S701: Δ EJECT**
- S702: PLAY/PAUSE**
- S703: \blacksquare STOP**
- S704: \blacktriangleright \blacktriangleright**
- S705: \blacktriangleleft \blacktriangleleft**
- S706: DISPLAY**
- S707: POWER STANDBY/ON**

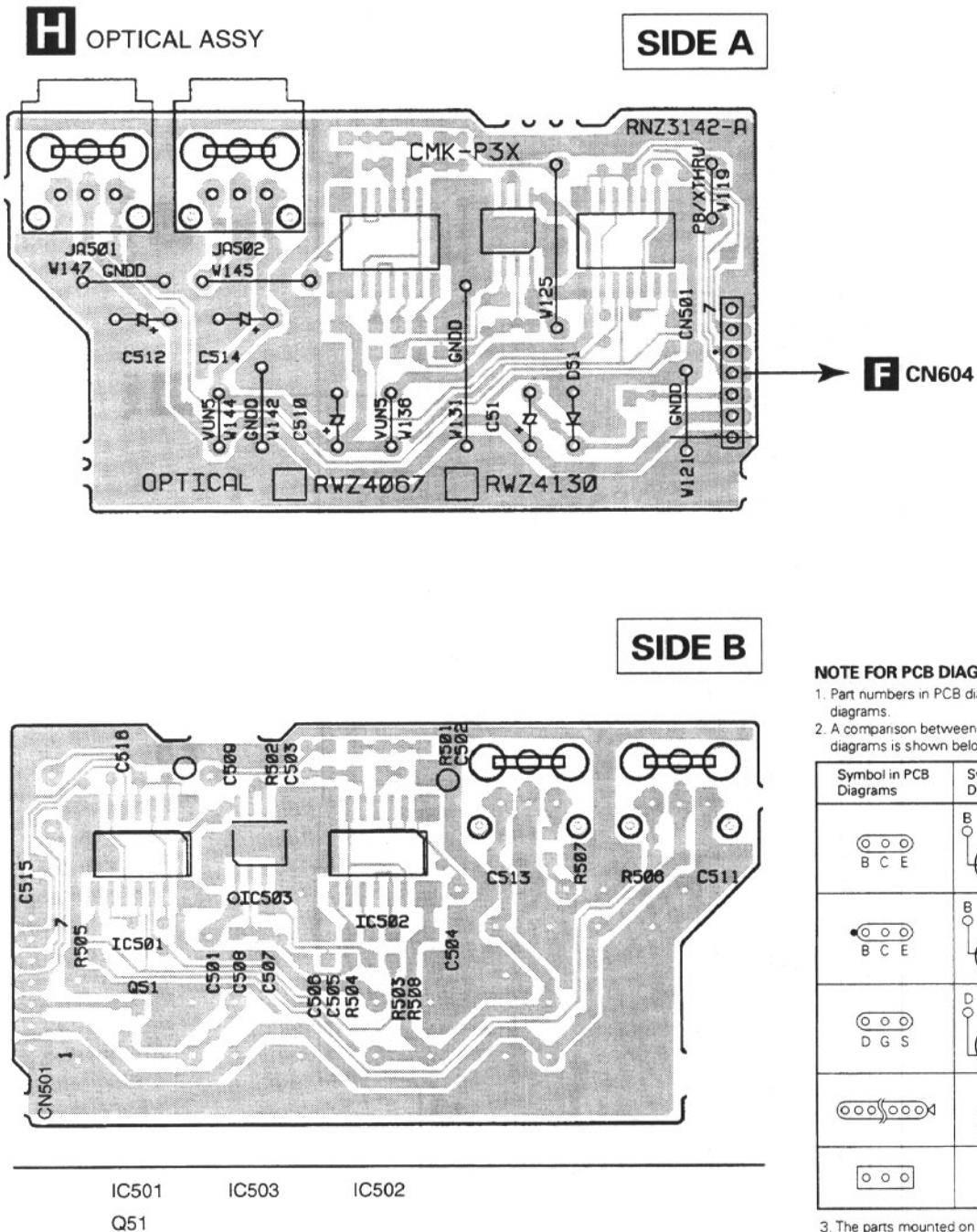
G**I**

4. PCB CONNECTION DIAGRAM

4.1 LED PCB ASSY, SW PCB ASSY, MOTOR PCB ASSY, SENSOR PCB ASSY, MECHANISM BOARD ASSY AND PICKUP ASSY



4.2 OPTICAL ASSY

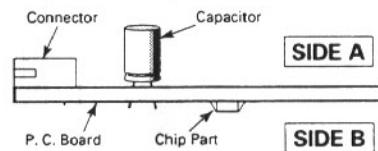


Symbol in PCB Diagrams	Symbol in Schematic Diagrams	Part Name
		Transistor
		Transistor with resistor
		Field effect transistor
		Resistor array
		3-terminal regulator

3. The parts mounted on this PCB include all necessary parts for several destination.

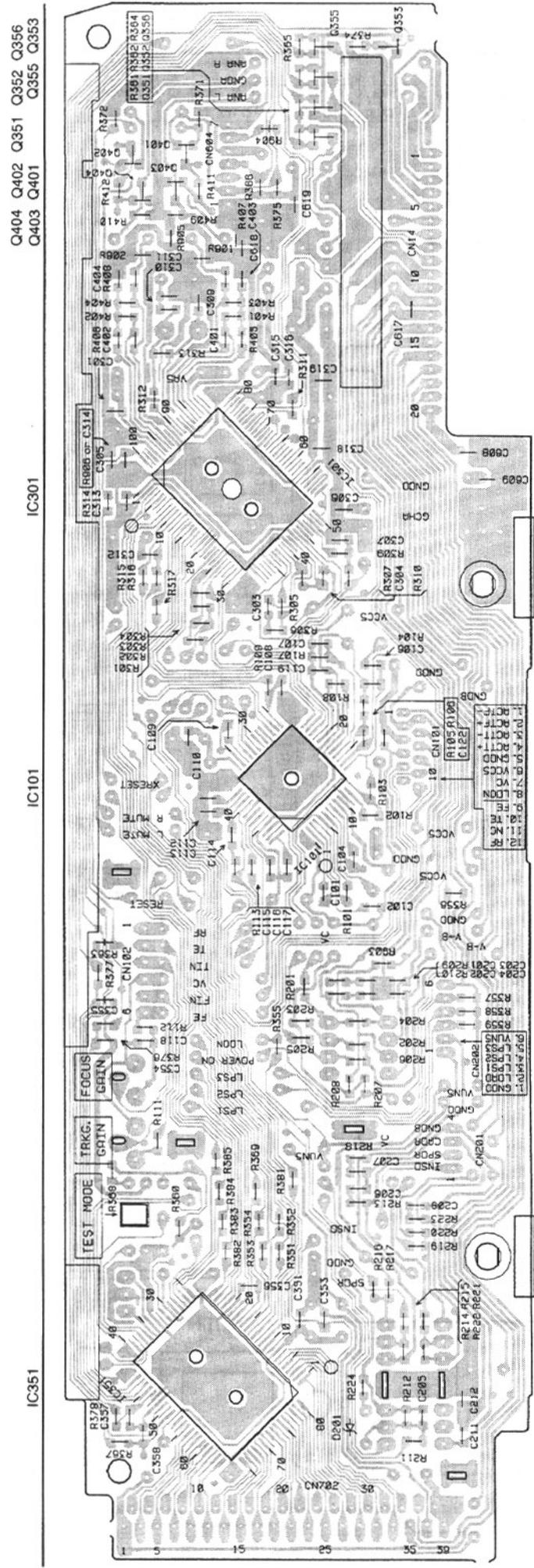
For further information for respective destinations, be sure to check with the schematic diagram.

4. Viewpoint of PCB diagrams



F MAIN ASSY

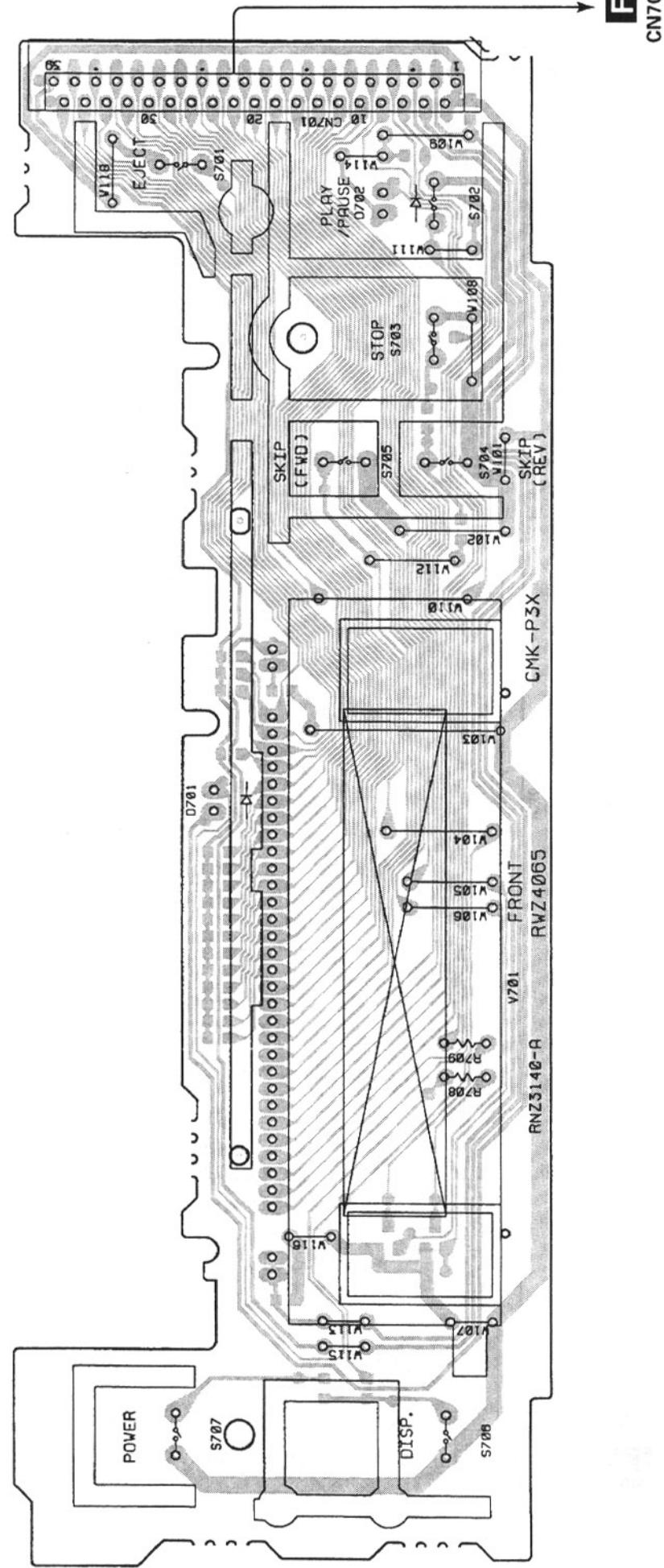
SIDE B



4.4 FRONT ASSY

SIDE A

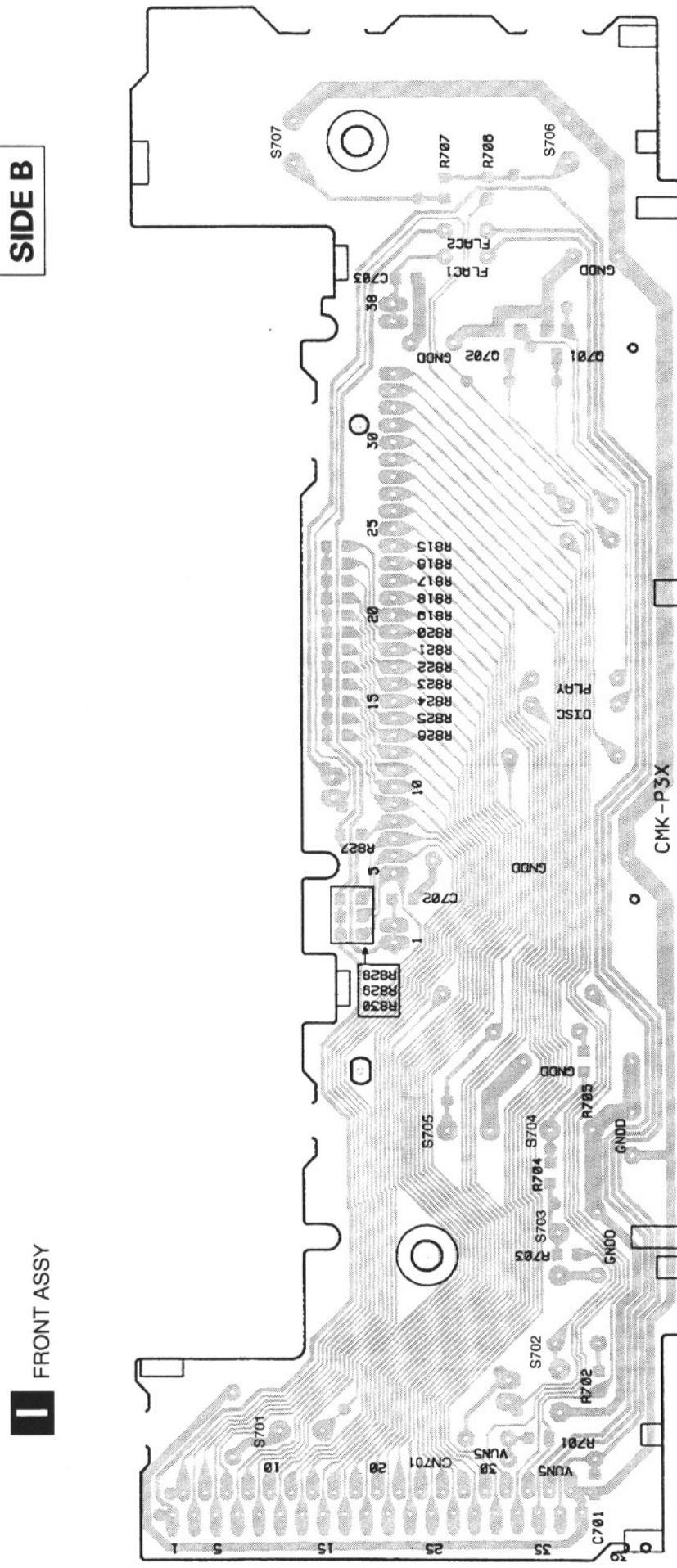
FRONT ASSY



CN702

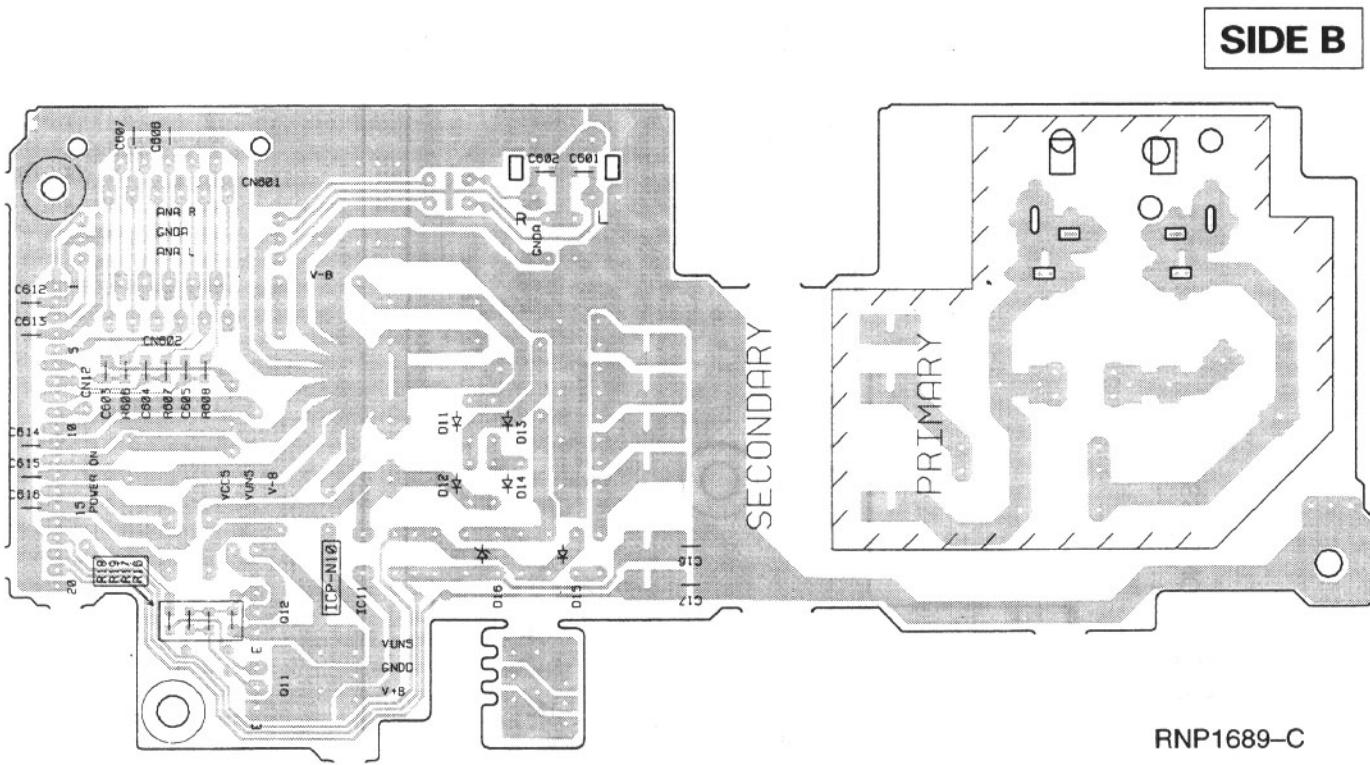
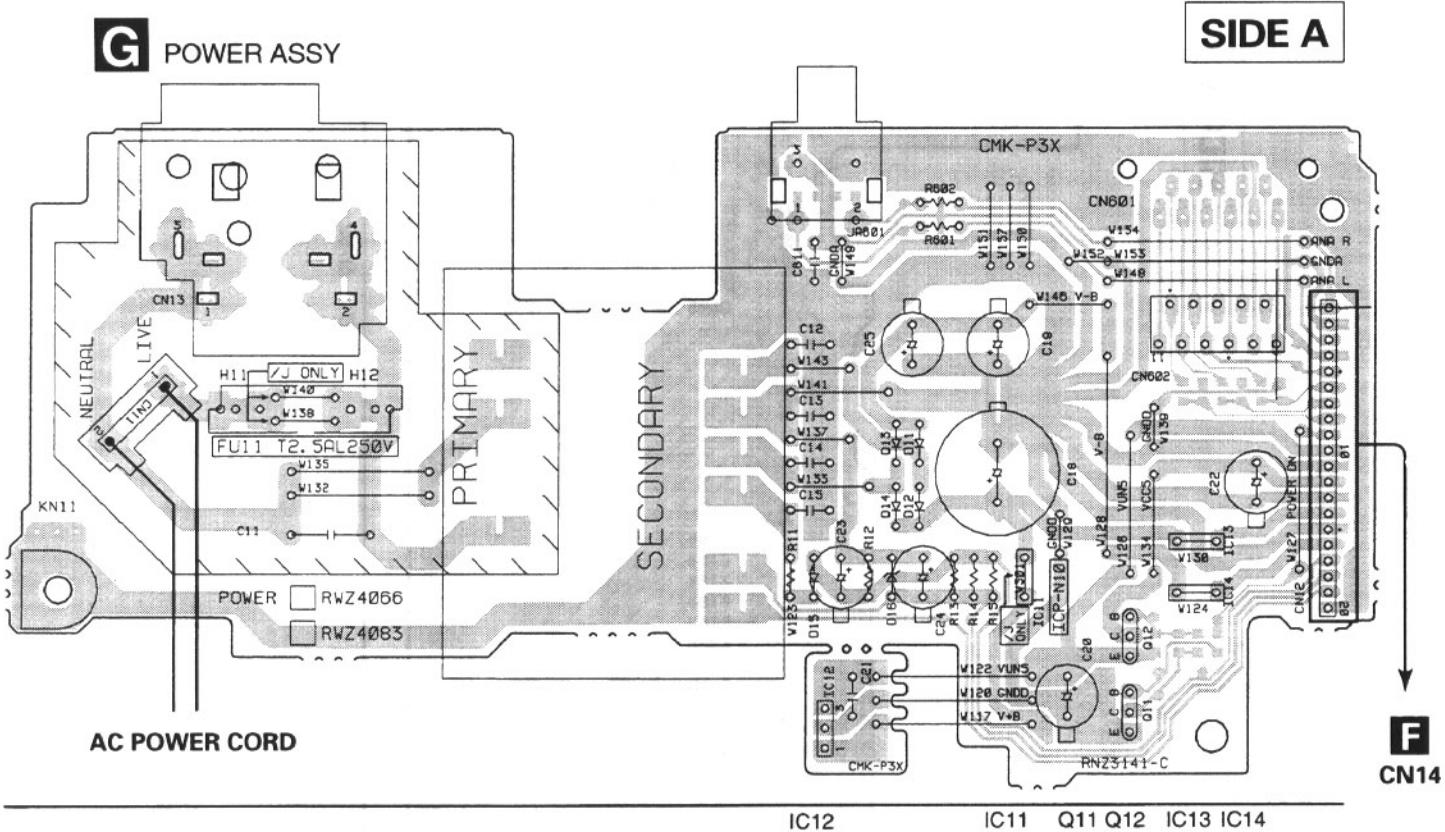
CN70

RNP1689-C



Q701 Q702

4.5 POWER ASSY



5. PCB PARTS LIST

NOTES : • Parts marked by " NSP " are generally unavailable because they are not in our Master Spare Parts List.

- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by $J = 5\%$, and $K = 10\%$).

$560\Omega \rightarrow 56 \times 10^1 = 561$ RD1/4PU 5 6 1 J

$47k\Omega \rightarrow 47 \times 10^3 = 473$ RD1/4PU 4 7 3 J

$0.5\Omega \rightarrow R50$ RN2H R 5 0 K

$1\Omega \rightarrow R10$ RS1P 1 R 0 K

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

$5.62k\Omega \rightarrow 562 \times 10^3 = 5621$ RN1/4PC 5 6 2 1 F

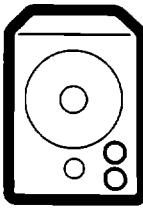
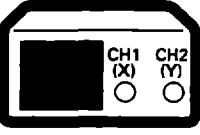
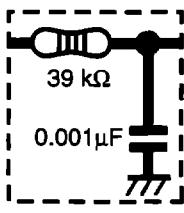
Mark	No.	Description	Parts No.	Mark	No.	Description	Parts No.	
LIST OF PCB ASSEMBLIES								
NSP	CD SLOT-IN MECHA		AXA7014	E MECHANISM BOARD ASSY				
NSP	└ SL MECHA PCB ASSY		AWX7007	SWITCHES AND RELAYS				
NSP	└ SENSOR PCB ASSY		AWZ7328	S610				
NSP	└ LED PCB ASSY		AWZ7329	DSG1016				
NSP	└ SW PCB ASSY		AWZ7330	OTHERS				
NSP	└ MOTOR PCB ASSY		AWZ7331	CN610				
NSP	└ SERVO MECHA ASSY SL		AXA7017	MT CONNECTOR 4P				
	└ MECHANISM BOARD ASSY		PWX1192	173979-4				
NSP	CDMAIN ASSY		RWM1975	I FRONT ASSY				
	└ FRONT ASSY		RWZ4065	SEMICONDUCTORS				
	└ OPTICAL ASSY		RWZ4067	Q701, Q702				
	└ POWER ASSY		RWZ4083	DTC143EK				
	└ MAIN ASSY		RWZ4210	MPG3062X				
D SENSOR PCB ASSY								
SEMICONDUCTORS								
Q601, Q602								
A LED PCB ASSY								
SEMICONDUCTORS								
D601, D602								
B SW PCB ASSY								
SWITCHES AND RELAYS								
S601								
C MOTOR PCB ASSY								
MOTOR PCB ASSY has no service part.								
H OPTICAL ASSY								
SEMICONDUCTORS								
IC501								
IC502								
IC503								
Q51								
D51								
C CAPACITORS								
C515								
C502								
C508								
C510								
C51								
C512, C514								
C507								
C505, C506								
C501, C503, C504, C509, C511								
C513, C516								
CEAS470M16								
CKSQYB102K50								
CKSQYB222K50								
CKSQYF103Z50								
CKSQYF103Z50								

Mark No.	Description	Parts No.	Mark No.	Description	Parts No.
RESISTORS			D201		MTZJ6.8B
All Resistors		RS1/10S□□□J	COILS AND FILTERS		
OTHERS			L303		LAU1R0J
JA502	OPTICAL LINK IN	GP1F32R	L302		LAU1R2J
JA501	OPTICAL LINK OUT	GP1F32T	L301, L351		LAU6R8J
CN501	7P SOCKET	KP200TA7L	CAPACITORS		
G POWER ASSY			C309		CCSQCH100D50
SEMICONDUCTORS			C312		CCSQCH101J50
△ IC11		ICP-N10	C401, C402		CCSQCH151J50
△ IC12		NJM78M05FA	C311		CCSQCH220J50
Q12		2SB1238X	C355		CCSQCH331J50
Q11		DTC114TS			
D16		MTZJ18B	C403, C404		CCSQCH681J50
△ D11-D15		S5688G	C405, C406		CEAL220M6R3
COILS AND FILTERS			C111, C352		CEAL470M16
△ L11		VTH1024	C103, C105		CEAL4R7M16
CAPACITORS			C308		CEALR47M50
△ C11 (10000pF/AC250V)		ACG7020	C317		CEAZ221M16
C603-C605		CCSQCH221J50	C302		CEZA470M16
C24		CEAS101M25	C114, C119, C354, C357		CKSQYB102K50
C23		CEAS101M35	C107, C112, C117, C205, C307		CKSQYB103K50
C18		CEAS32M16	C101, C102, C104, C106		CKSQYB104K25
C19		CEAS471M16	C211, C212		CKSQYB104K25
C20, C22		CEAS471M6R3	C304		CKSQYB152K50
C15		CKCYE472P2H	C109, C113, C116		CKSQYB333K25
C12-C14		CKCYF103Z50	C115		CKSQYB472K50
C611		CKCYF473Z50	C303		CKSQYB473K25
C601, C602		CKSQYB471K50	C118		CKSQYB561K50
C16, C17		CKSQYF103Z50	C310		CKSQYF102Z50
C606, C607		CKSQYF473Z50	C110, C122, C201-C204		CKSQYF103Z50
			C206-C208, C301, C305, C313		CKSQYF103Z50
			C315, C351, C353, C356, C358		CKSQYF103Z50
RESISTORS			C608, C618		CKSQYF103Z50
R12		RD1/4PU103J	C108, C316		CKSQYF473Z50
R13-R15		RD1/4PU152J			
R601, R602		RD1/4PU221J			
Other Resistors		RS1/10S□□□J	RESISTORS		
OTHERS			VR101, VR102 (22k)		RCP1103
H11, H12	FUSE CLIP	AKR1003	Other Resistors		RS1/10S□□□J
CN602	11P JUMPER CONNECTOR	KPE11			
JA601	2P PIN JACK	RKB1041			
△ CN601	TERMINAL	RKC-061			
	11P SOCKET	RKP1754			
CN12	CONNECTOR	TUC-P20P-B1			
KN11	EARTH METAL FITTING	VNF1084			
F MAIN ASSY					
SEMICONDUCTORS					
△ IC101		CXA1372BQ			
IC301		CXD2519Q			
△ IC201		LA6517			
IC202		LA6520			
IC351		PD4741A			
Q403, Q404		2PD601A			
Q401, Q402		DTA124EK			
Q353		DTA144EK			
Q351, Q355, Q356		DTC114TK			
Q352		DTC124EK			

6. ADJUSTMENT

1. PREPARATIONS (準備)

1.1 Jigs and Measuring Instruments (使用測定器/治工具類)

 8-cm DISC (With at least about 20 minutes recording) (20分程度信号の 入ったディスク)	 CD TEST DISC (YEDS-7)	 Precise screwdriver	 screwdriver (small)	 screwdriver (medium)
 Ball point hexagon wrench (size: 1.5mm) GGK1002 ボールポイント付 六角 ドライバー(対辺 1.5mm)	 + screwdriver (large)	 Low-frequency oscillator	 Dual-trace oscilloscope (10 : 1 probe)	 39 kΩ 0.001μF Low pass filter (39 kΩ + 0.001μF)

1.2 Necessary Adjustment Points (調整に必要な項目)

When (このような時)

Adjustment points

Exchange
PICKUP
(ピックアップを交換した時)

1.2.3.4.5.6. → Page 29~31

Exchange
MAIN ASSY
(MAIN ASSYを交換した時)

1.2.3.4.5.6. → Page 29~31

Exchange
SERVO MECH ASSY
(サーボメカASSYを交換した時)

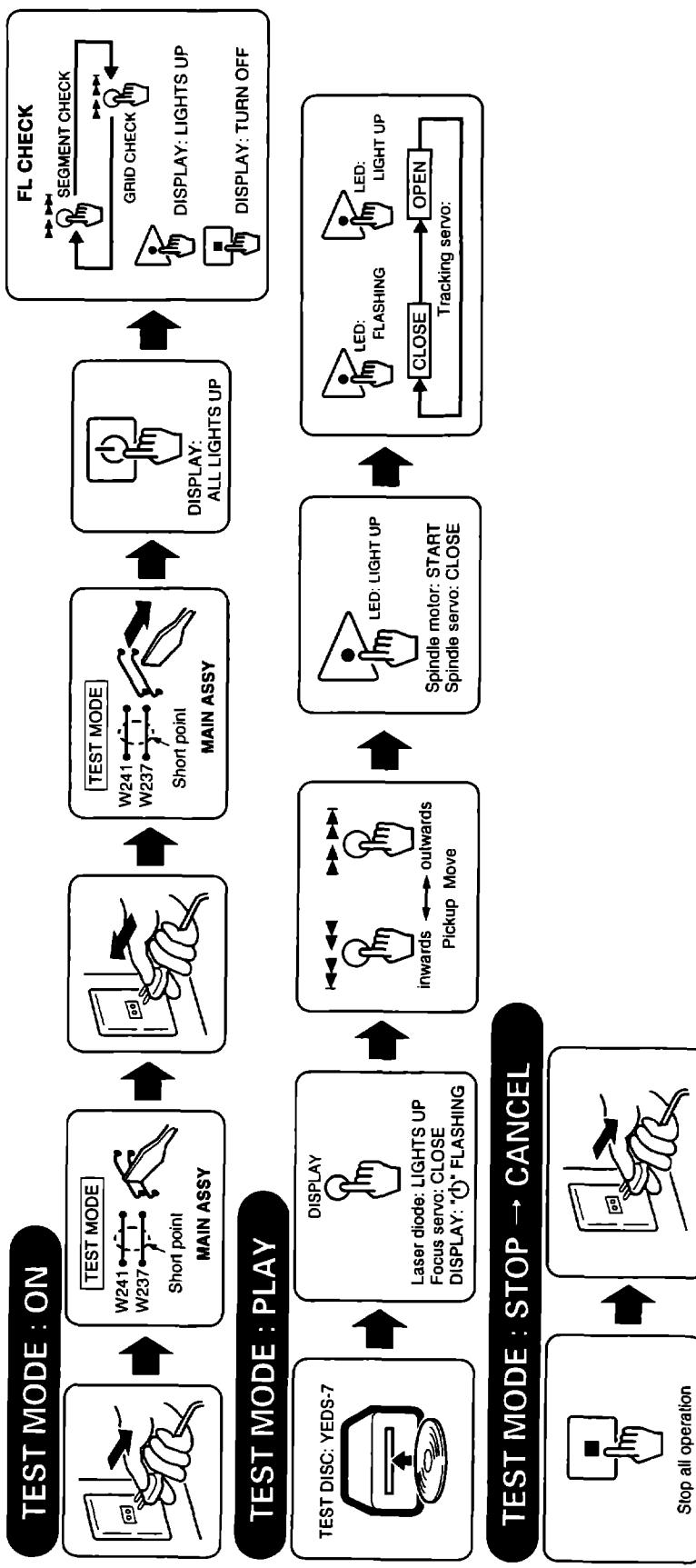
1.2.3.4.5.6. → Page 29~31

Exchange
SPINDLE MOTOR
(スピンドルモーターを交換した時)

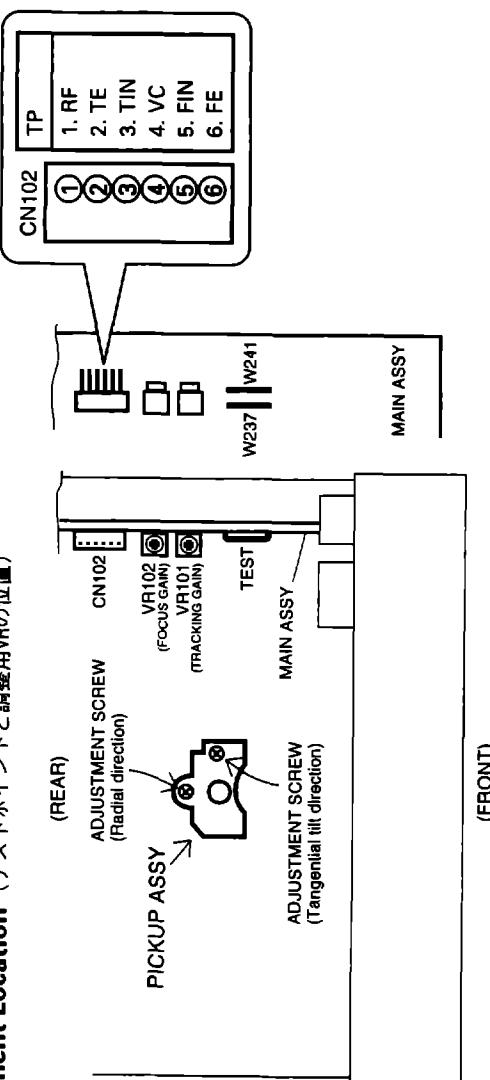
 ADJ → Page 9

2. ADJUSTMENT (調整)

2.1 How to Start/Cancel Test Mode (テストモードの設定/解除)



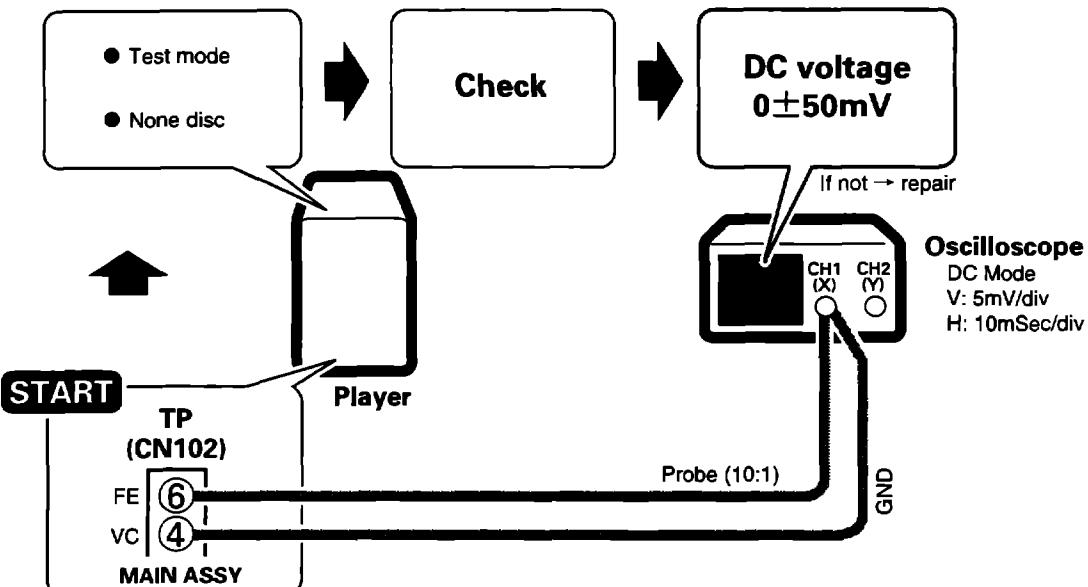
2.2 Adjustment Location (テストポイントと調整用VRの位置)



2.3 Check and Adjustment (確認、調整)

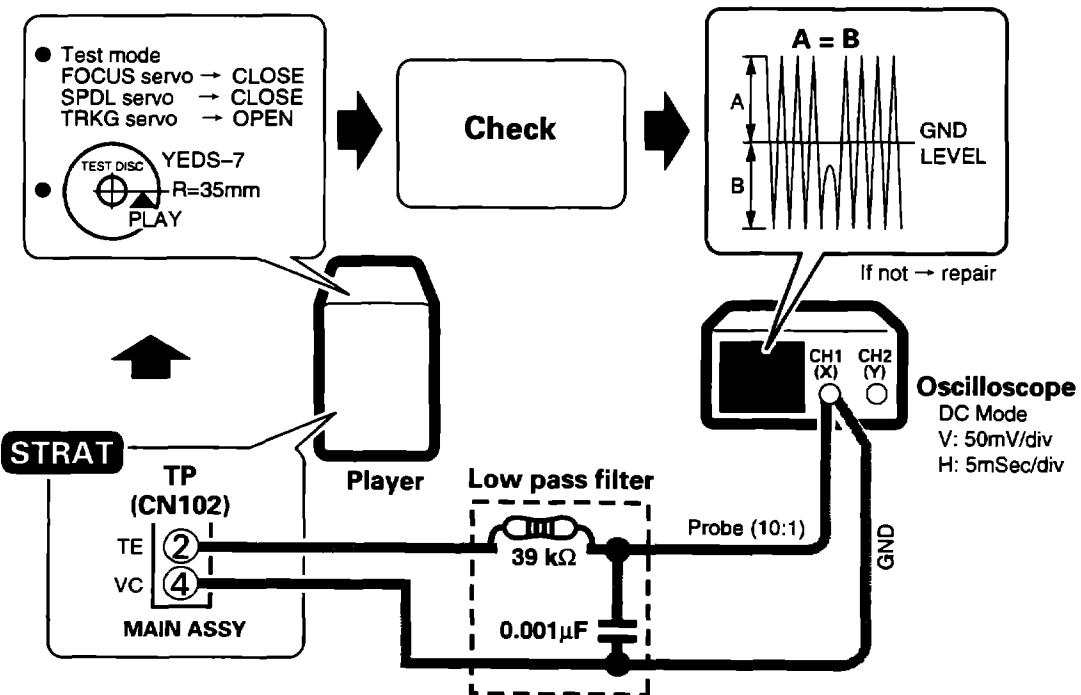
1. Focus Offset Check

(フォーカスオフセット確認)



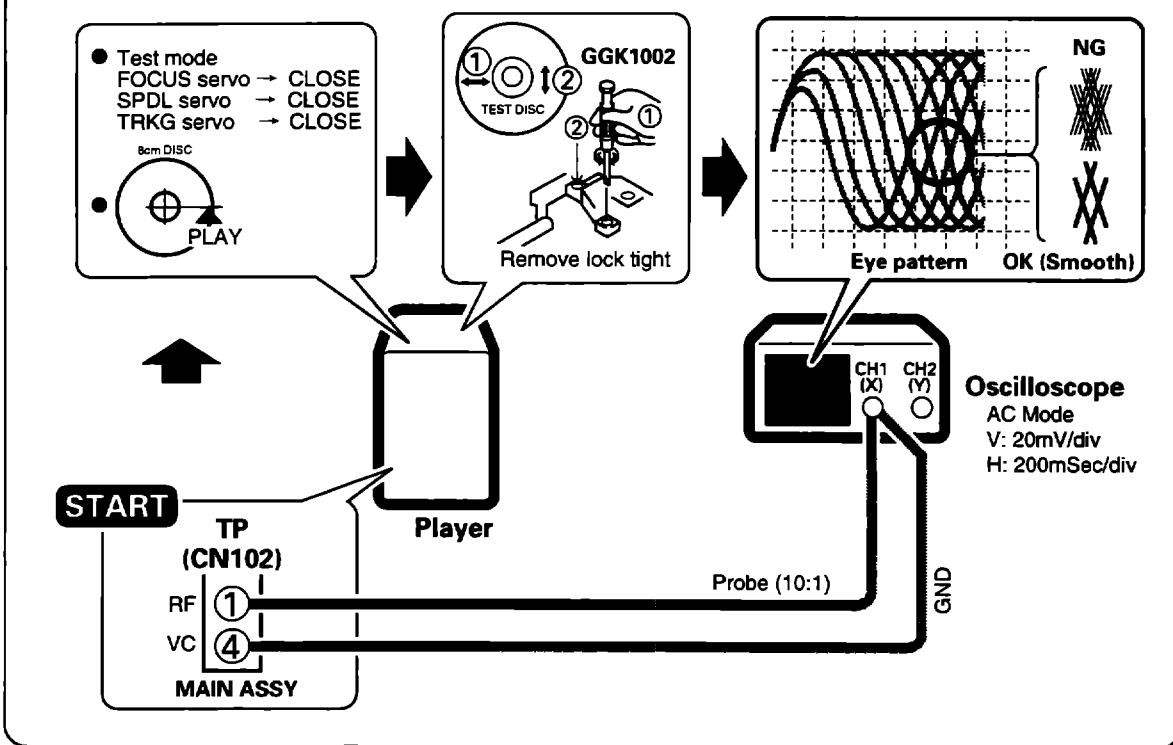
2. Tracking Error Balance Check

(トラッキングエラーバランス確認)



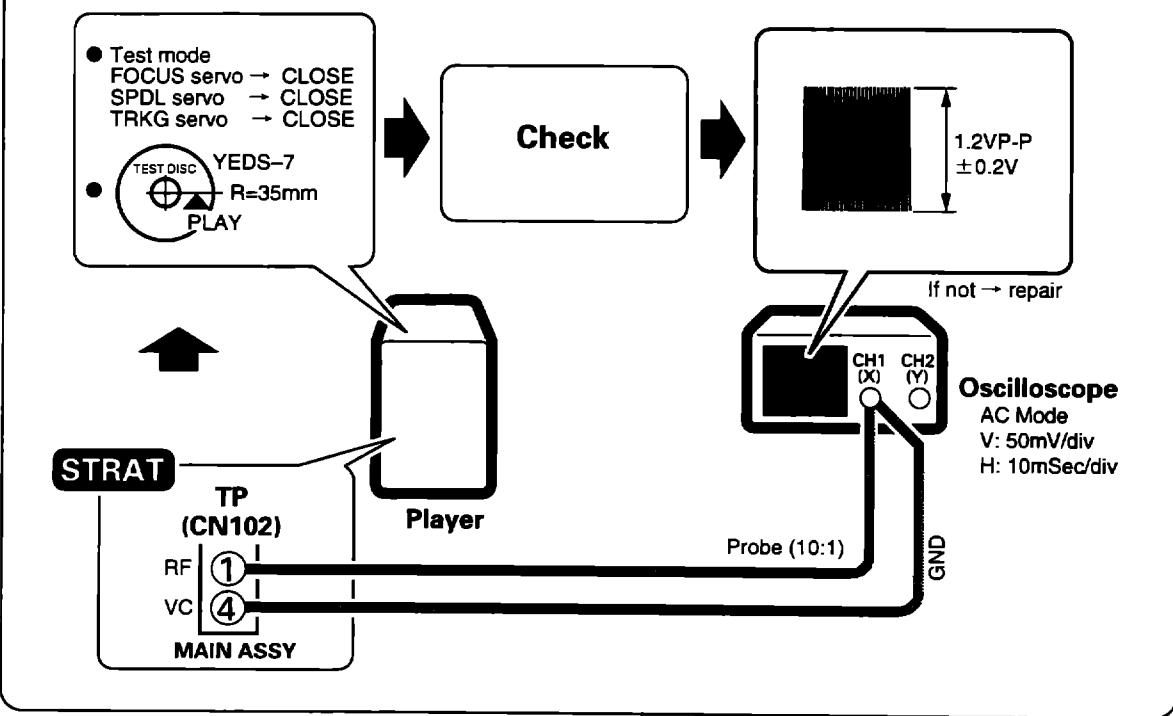
3. Pickup ①Radial/ ②Tangential Direction Tilt Adjustment

(ピックアップ①ラジアル方向②タンジェンシャル方向の傾き調整)



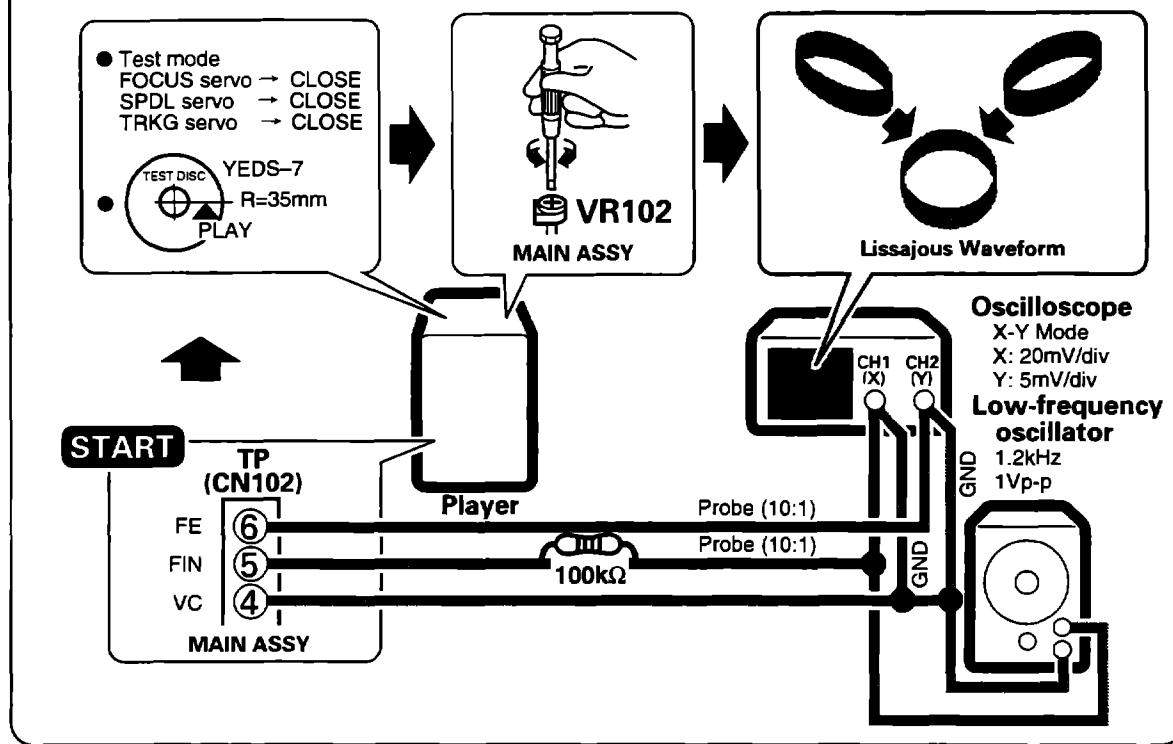
4. RF Level Check

(RFレベル確認)



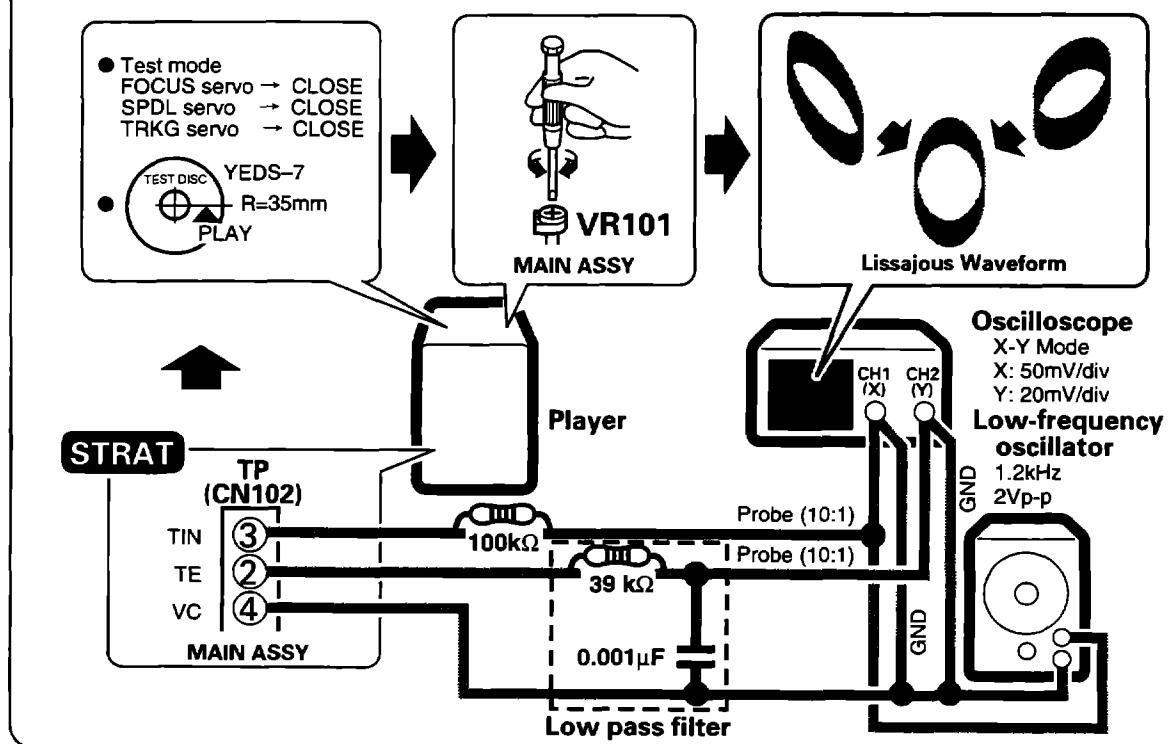
5. Focus Servo Loop Gain Adjustment

(フォーカスサーボループゲイン調整)



6. Tracking Servo Loop Gain Adjustment

(トラッキングサーボループゲイン調整)



7. GENERAL INFORMATION

7.1 PARTS

7.1.1 IC

■ PD4741A (IC351: MAIN ASSY)

● System Control Micro-computer

● Pin Function

● The information shown in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.

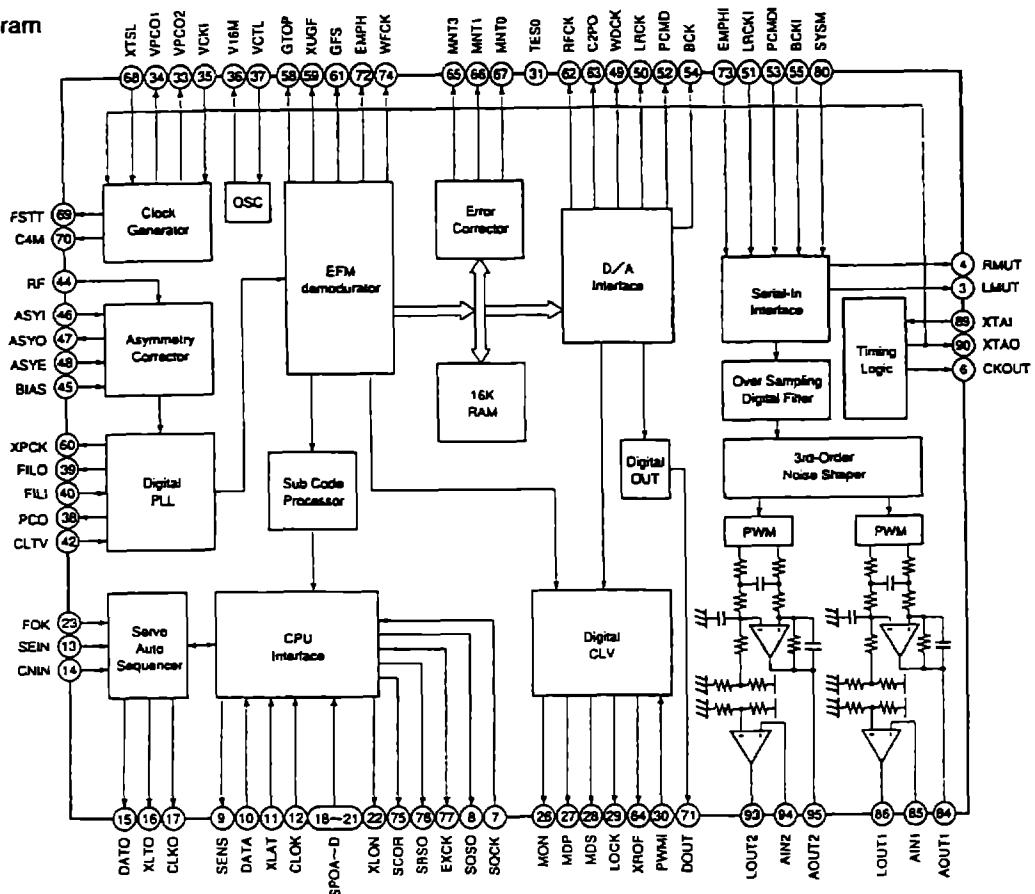
No.	Port Name	Pin Name	I/O	Description	Logic	Status
1 5	P94/FIP6 P90/FIP2	G7 G3	O	FL Grid output		
6	P81/FIP1	G2				
7	P80/FIP0	G1				
8	VDD	VDD	—	Power Supply		
9	P27/SCK0	RMUT	I	CH2/"0" Detection input	Detect=H	
10	P26/SO0/SB	R MUTE	O	Analog Mute output	MUTE ON=L	L
11	P25/SI0/SB	L MUTE	O		MUTE ON=L	L
12	P24/BUSY	XRESET	O	CXD2519Q System Reset	RESETON=L	L
13	P23/STB	XLAT	O	CXD2519Q Latch output	LAT=L	L
14	P22/SCK1	CD CLK	O	CXD2519Q Clock output		L
15	P21/SO1	CD DATA	O	CXD2519Q Data output		L
16	P20SI1	SQSO	I	Sub Q Data output		
17	RESET	RESET	I	CPU Reset	RESETON=L	
18	P74	LD ON	O	Laser Diode Control output	LDON=L	L
19	P73	POWER ON	O	Peripheral Circuit Power Supply Control output	POWON=H	L
20	AVss	AVss	—	Analog Ground		
21	P17/ANI7	LPS3	I	Slot-mecha Switch input	ACTIVE=L	
22	P16/ANI6	LPS2	I		ACTIVE=L	
23	P15/ANI5	LPS1	I		ACTIVE=L	
24	P14/ANI4	LMUT	I	CH1/"0" Detection input	Detect=H	
25	P13/ANI3	SENS	I	CXD2519Q SENS input		
26	P12/ANI2	GFS	I	CXD2519Q GFS input		
27	P11/ANI1	FOK	I	Focus Control Signal input	FOK=H	
28	P10/ANI0	KIN	I	Key input for A/D Converter		
29	AVDD	AVDD	—	Analog Power Supply		
30	AVREF	AVREF	I	Analog Reference Voltage		
31	P04/XT1	INSD	I	Inside SW input	ACTIVE=L	
32	XT2	—	—	Non Connection	OPEN	
33	Vss	Vss	—	Ground		

No.	Port Name	Pin Name	I/O	Description	Logic	Status
34	X1	X1	I	Connected to Ceramic Oscillator (4.19MHz)		
35	X2	X2	—			
36	P37	TEST	I	Switching Test Mode input	TEST=L	
37	P36/BUZ	J/EX	I	Switching Destination input	J model=H	
38	P35/PCL	—	O	Non Connection		L
39	P34/TL2	—	O			L
40	P33/TL1	LOUT	O	Loading Motor Control	OUT=H	L
41	P32/TO2	LIN	O		IN=H	L
42	P31/TO1	S R/E	I/O	Request input/output for Bus Communication	REQ=L	H
43	P30/TO0	S DATA	O	Data output for Bus Communication	ACTIVE=H	H
44	P03/INTP3	SCOR	I	CXD2519Q Sub Code Sync input		
45	P02/INTP2	S RDATA	I	Data input for Bus Communication		
46	P01/INTP1	S CLK	I	Clock input for Bus Communication		
47	P00/INTP0	REMO	I	Non Connection to Ground	GND	
48	IC(Vpp)	IC(Vss)	—	Programming Power Supply		
49	P72	PB/XTHRU	O	Optical Out Control output	ACTIVE=H	L
50	P71	PB ON	O	Non Connection	OPEN	L
51	P70	SYS DET	I	12V System Connection input	SYSTEM=H	
52	VDD	VDD	—	Power Supply		
53	P127/FIP33	—	O	Non Connection	OPEN	L
54	P126/FIP32	—	O			
55	P125/FIP31	P22	O	Segment output		
60	P120/FIP26	P17				
61	P117/FIP25	P16				
68	P110/FIP18	P9				
69	P107/FIP17	P8	O	LED Drive		
70	P106	FIP16				
71	VLOAD	VFDP				
72	P105/FIP15	P6	O	Segment output		
77	P100/FIP10	P1				
78	P97/FIP9	LED(PLAY)	O	Grid output		
79	P96/FIP8	LED(DISC)				
80	P95/FIP7	G8	O			

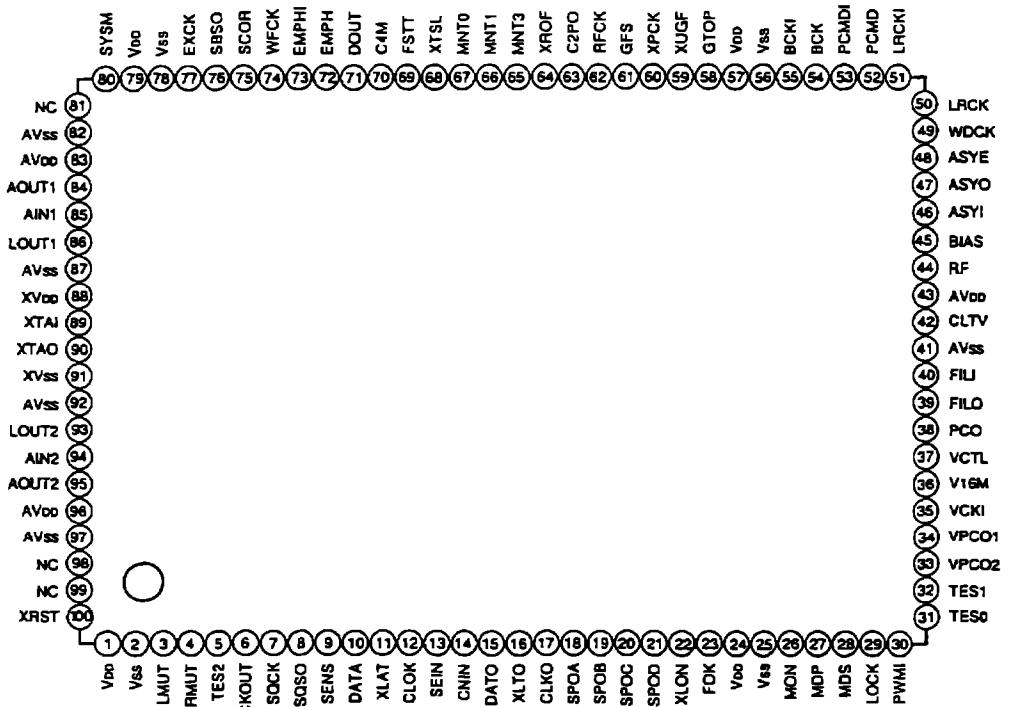
■ CXD2519Q (IC301: MAIN ASSY)

● EFM Decoder and D/A Converter

● Block Diagram



● Pin Assignment (Top view)



● Pin Function

CXD2519Q

No.	Pin Name	I/O	Description
1	VDD	—	Power Supply (+5V)
2	Vss	—	GND
3	LMUT	O	Lch "0" Detection Flag
4	RMUT	O	Rch "0" Detection Flag
5	TES2	O	Output Test Terminal; Normally Open
6	CKOUT	O	Master Clock Divider output Terminal; selects and outputs XTAI $\times 1$, $\times 1/2$, $\times 1/4$, or "L" only.
7	SQCK	I	Clock input for SQSO leadout
8	SQSO	O	SubQ 80bit Serial output
9	SENS	O	SENS output; Outputs to CPU
10	DATA	I	Serial data input from CPU
11	XLAT	I	Latch input from CPU; Latches serial data at startup.
12	CLOK	I	Serial data transmission clock input from CPU
13	SEIN	I	Sense input from SSP
14	CNIN	I	Track Jump Counter Signal input
15	DATO	O	Serial data output to SSP
16	XLTO	O	Serial data latch output to SSP; latches serial data at startup.
17	CLKO	O	Serial data transmission clock output to SSP
18	SPOA	I	Micro-computer Expansion Interface (input A)
19	SPOB	I	Micro-computer Expansion Interface (input B)
20	SPOC	I	Micro-computer Expansion Interface (input C)
21	SPOD	I	Micro-computer Expansion Interface (input D)
22	XLON	O	Micro-computer Expansion Interface (output)
23	FOK	I	Focus OK input Terminal Used for SENS output and servo auto sequencer.
24	VDD	—	Power Supply (+5V)
25	Vss	—	GND
26	MON	O	Spindle Motor ON/OFF Control output
27	MDP	O	Spindle Motor Servo Control
28	MDS	O	
29	LOCK	O	Samples GFS at 460Hz and outputs H when GFS is H; outputs L when L is output 8 times consecutively.
30	PWMI	I	Spindle motor remote control input
31	TES0	I	TEST Terminal; Normally GND
32	TES1	I	

No.	Pin Name	I/O	Description
33	VPCO2	O	Charge pump output for wide-range EFM PLL; ON/OFF controlled by address E FCSW.
34	VPCO1	O	Charge pump output for wide-range EFM PLL
35	VCKI	I	VCO2 oscillation input for wide-range EFM PLL
36	V16M	O	VCO2 oscillation output for wide-range EFM PLL
37	VCTL	I	VCO2 control voltage input for wide-range EFM PLL
38	PCO	O	Charge pump output for master PLL
39	FILO	O	Master PLL (slave = digital PLL) filter output
40	FILI	I	Master PLL Filter input
41	AVss	—	Analog GND
42	CLTV	I	VCO control voltage input for master
43	AVDD	—	Analog Power Supply (+5V)
44	RF	I	EFM Signal input
45	BIAS	I	Asymmetry circuit constant current input
46	ASYI	I	Asymmetry comparator voltage input
47	ASYO	O	EFM full-swing output (L=Vss; H=VDD)
48	ASYE	I	L: asymmetry circuit OFF H: asymmetry circuit ON
49	WDCK	O	D/A interface; word clock f=2Fs
50	LRCK	O	D/A interface; LR clock output F=F _s
51	LRCKI	I	LR Clock input
52	PCMD	O	D/A interface; serial data output (2's COMP, MSB first)
53	PCMDI	I	D/A interface; serial data input (2's COMP, MSB first)
54	BCK	O	D/A interface; bit clock output
55	BCKI	I	D/A interface; bit clock output
56	Vss	—	GND
57	VDD	—	Power Supply (+5V)
58	GTOP	O	GTOP output
59	XUGF	O	XUGF output
60	XPCK	O	XPLCK output
61	GFS	O	GFS output
62	RFCK	O	RFCK output
63	C2PO	O	C2PO output
64	XROF	O	XRAOF output

No.	Pin Name	I/O	Description
65	MNT3	O	MNT3 output
66	MNT1	O	MNT1 output
67	MNT0	O	MNT0 output
68	XTSL	I	X'tal selection input terminal; X'tal is L when input is 16.9344MHz and H when input is 33.8688MHz.
69	FSTT	O	2/3 divider output of terminal Nos. 80 and 90
70	C4M	O	4.2336MHz output; outputs VCK1 1/4 divider during CAV-W mode.
71	DOUT	O	Digital Out output terminal
72	EMPH	O	Outputs H when playback disc emphasis is ON; outputs L when emphasis is OFF.
73	EMPHI	I	inputs H when de-emphasis is ON; inputs L when de-emphasis is OFF.
74	WFCK	O	WFCK output
75	SCOR	O	Outputs H when either subcode sync S0 or S1 is detected.
76	SBSO	O	SubP - W serial output
77	EXCK	I	Clock input for SBSO leadout
78	Vss	—	GND
79	VDD	—	Power Supply (+5V)
80	SYSM	I	Mute input terminal. Active=H
81	NC	—	
82	AVss	—	Analog GND
83	AVDD	—	Analog Power Supply (+5V)
84	AOUT1	O	Lch Analog output terminal
85	AIN1	I	Lch OPAMP input terminal
86	LOUT1	O	Lch LINE output terminal
87	AVss	—	Analog GND
88	XVDD	—	Power Supply for Master Clock
89	XTAI	I	Crystal oscillation circuit input terminal; when master clock is input from an external source, it is input through this terminal.
90	XTAO	O	Crystal oscillation circuit output terminal
91	XVss	—	GND for Master Clock
92	AVss	—	Analog GND
93	LOUT2	O	Rch LINE output terminal
94	AIN2	I	Rch OPAMP input terminal
95	AOUT2	O	Rch Analog output terminal

No.	Pin Name	I/O	Description
96	AVDD	—	Analog Power Supply (+5V)
97	AVss	—	Analog GND
98	NC	—	
99	NC	—	
100	XRST	I	System Reset. L= Reset

Notes:

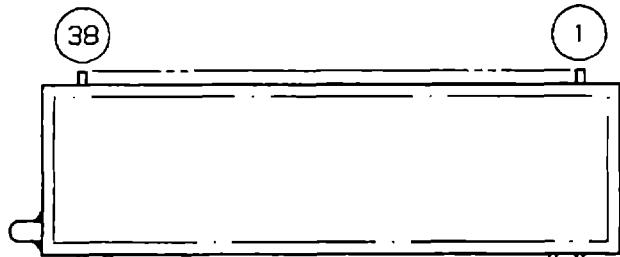
- *PCMD* is the 2's complement output of MSB first.
- *GTOP* monitors Frame Sync protection conditions (H: Sync protection window Open).
- *XUGF* is the negative pulse with Frame Sync obtained from the EFM signal; signal before Sync protection.
- *XPLCK* is the inversion of the EFM PLL clock; *PLL* is created so that edges or points of the leading edge and EFM signal are aligned.
- *GFS* becomes H when Frame Sync and interpolation timing are aligned.
- *RFCK* is the 136 μ cycle signal (normally instantaneous) made with X'tal accuracy.
- *C2PO* is the signal that indicates the data error status.
- *XRAOF* is the signal generated when 16k RAM exceeds the $\pm 4F$ jitter margin.

7.1.2 DISPLAY

■ RAW1154 (V701: FRONT ASSY)

● FL Indicator Tube

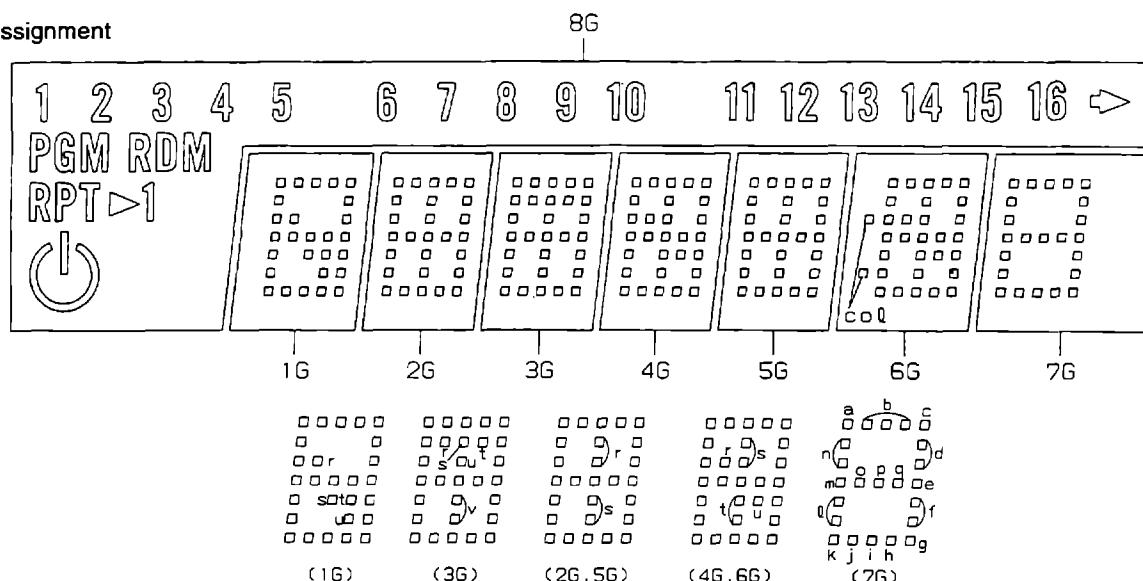
● Pin Assignment



NOTE 1) F1,F2 --- Filament
2) NP ----- No pin
3) DL ----- Datum Line
4) 1G~8G --- Grid

● Pin Connection

● Grid Assignment

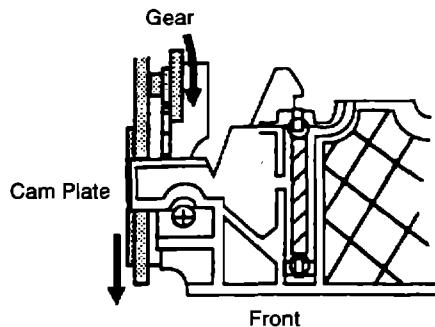


• Anode Connection

	1G	2G	3G	4G	5G	6G	7G	8G
P12	q	q	q	q	q	q	q	12
P13	m	m	m	m	m	m	m	13
P14	n	n	n	n	n	n	n	14
P15	o	o	o	o	o	o	o	15
P16	o	p	p	p	p	p	p	16
P17	q	q	q	q	q	q	q	➡
P18	r	r	r	r	r	r	-	PGM
P19	s	s	s	s	s	s	-	RDM
P20	t	-	t	t	-	t	-	RPT
P21	u	-	u	u	-	u	-	▷1
P22	-	-	v	-	-	col	-	▶

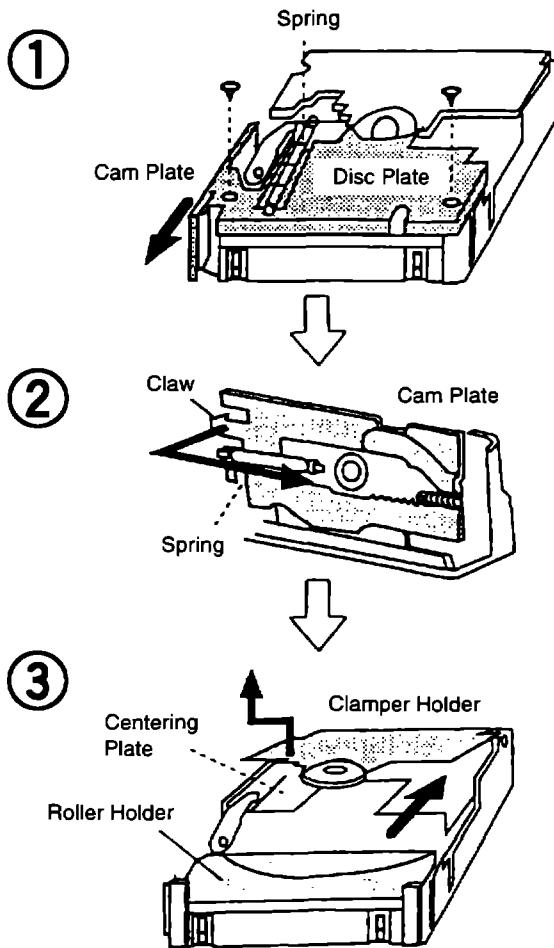
7.2 DISASSEMBLY

● CD Disc Manual Removal Method



Turn the gear in arrow direction to the front, and move the cam plate to the front. When the gear is turned until the cam plate comes to the very front position (EJECT position), the CD disc will be pulled out.

● Servo Mechanism Exchange Method and Mechanism Adjustment Method

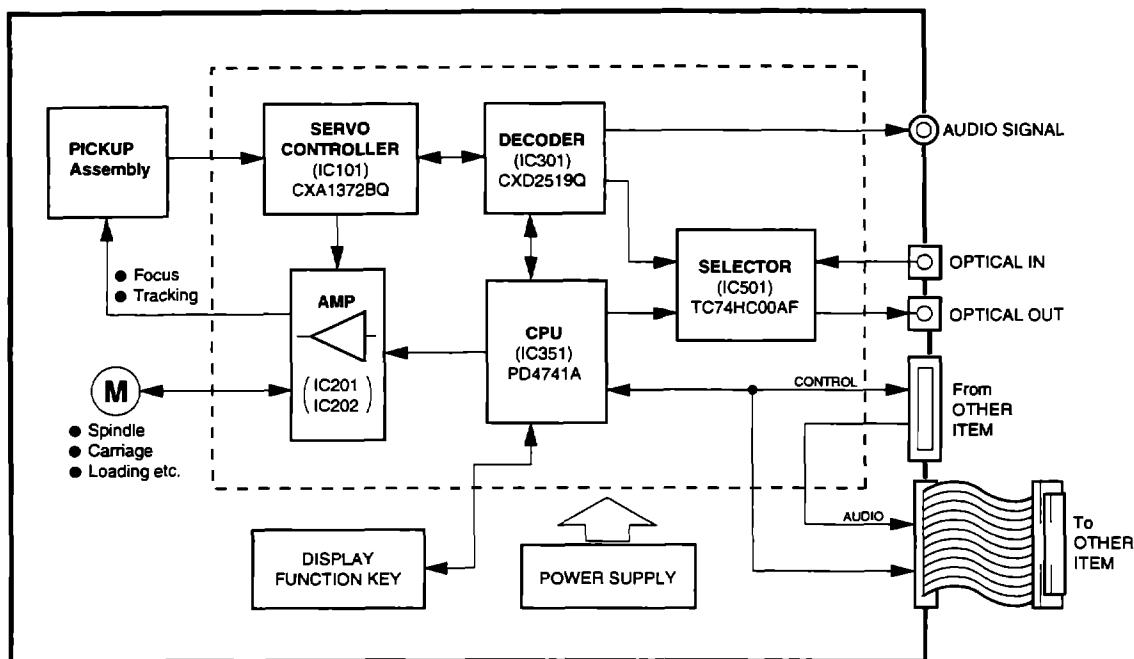


① Remove the spring and the two screws, and then remove the disc plate. Move the cam plate to the very front position (EJECT position). (refer to the CD Disc Manual Removal Method.)

② Remove the spring.
Remove to the front while pulling the claw part of the cam plate to the outside.

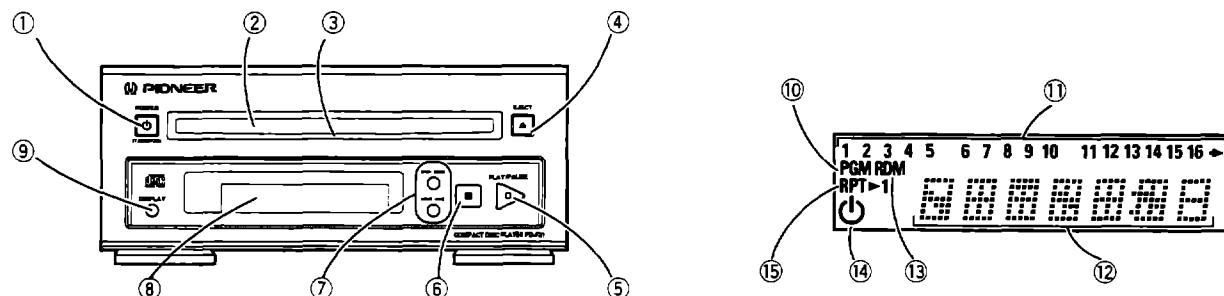
③ Raise the clamp holder lightly, slide it in arrow direction, and remove it. When the centering plate is moved to the rear, the four screws fixing the servo mechanism become visible.
When these screws are removed, the servo mechanism assembly can be removed.
TAN and RAD adjustment are executed from above with the clamp holder and the roller holder removed and only the magnet clamp placed onto the CD disc.

7.3 BLOCK DIAGRAM



8. PANEL FACILITIES AND SPECIFICATIONS

PANEL FACILITIES



- ① **POWER, STANDBY/ON switch**
- ② **Disc slot**
- ③ **Disc indicator**
Lights when a disc is loaded
- ④ **CD EJECT button (▲)**
- ⑤ **PLAY/PAUSE button, play indicator**
- ⑥ **Stop button (■)**
- ⑦ **Manual/Track-search buttons**
(◀◀◀◀, ▶▶▶▶)
- ⑧ **Display Section**
- ⑨ **DISPLAY button**

[DISPLAY SECTION]

- ⑩ Lights during program input and playback
- ⑪ Music calendar (track display)
- ⑫ Track and time display
- ⑬ Lights during random play
- ⑭ Standby indicator
- ⑮ Lights during repeat play
 - RPT: all-track repeat
 - RPT▶1: one-track repeat

■ SPECIFICATIONS

Type	Compact Disc digital audio system
Usable discs	Compact Discs
Channels	2 (stereo)
Frequency Response	4 Hz - 20 kHz
Signal-to-Noise Ratio	110 dB (EIAJ)
Wow and Flutter	Limit of measurement (0.001%) or less (EIAJ)
Power Requirements	AC 230 V, 50/60 Hz
Power Consumption	12 W
Dimensions	190 (W) x 80.5 (H) x 274 (D) mm
Weight	2.0 kg

Accessories

Warranty Card	1
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NOTE:

*Specifications and design subject to possible modification
without notice, due to improvements.*